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Plastics

DEALING WITH THE MANUFACTURE, USES AND POTENTIALITIES OF PLASTIC MATERIALS

#202

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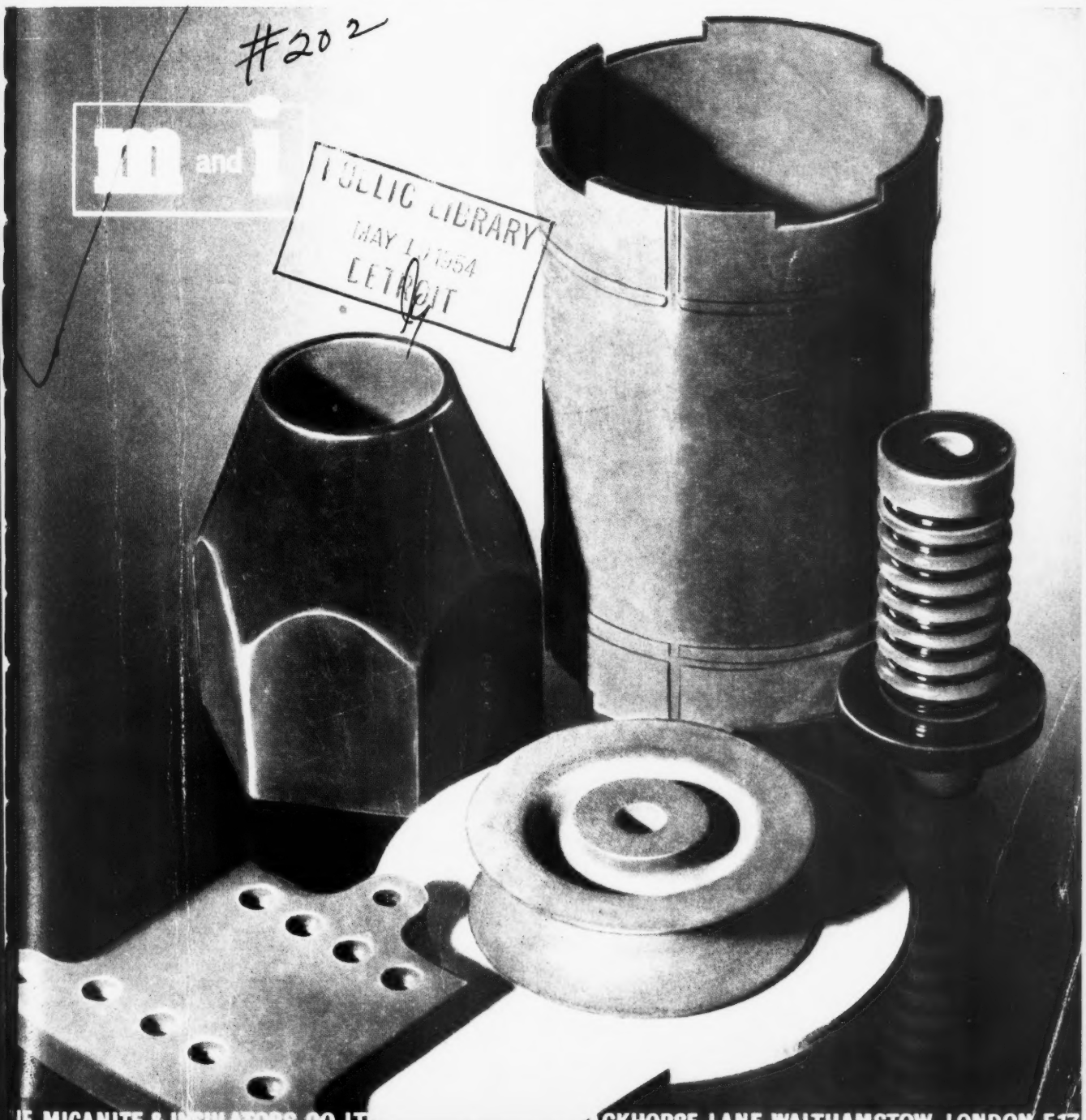

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these are the facts
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Light and strong ideal for aircraft fittings.
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Easily shaped in wooden moulds.
Resists corrosion (here shown as pipe lining).
Cobex is dimensionally stable and lies flat.
Cobex is easily joined by Hot Torch Welding.
Made in a wide colour range glazed or matt.
COBEX COLOURS
Cobex is a good electrical insulator.
In ever wider use for deep draw moulding.
No fire risk completely non-inflammable.

COBEX (Regd.) is manufactured by

BX PLASTICS LTD

and is supplied in sheets and in small block form. Full information will be forwarded gladly on request.

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Colorant Blend 604

the *VERSATILE* plastic

Producing Extruded Colours—uniform, consisting coloured Kleestron pellets.

Where cheapness, lightness and sheer adaptability are essential in a moulding material, polystyrene will be used, almost without exception. And where polystyrene is the need, Kleestron Colorant Blend 604 is the choice. This most versatile of plastics is supplied as granules, fines or a mixture or both—each type eminently suitable for both dry colouring or extruded colouring.

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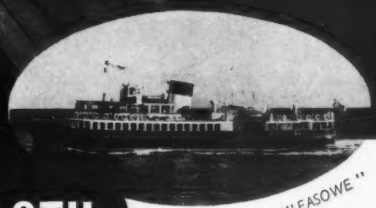

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Built by Philip & Son Ltd.,
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NON-FADING— HARDWEARING LEATHERCLOTH MADE WITH Geon PVC!

•*Please write for Booklet No. 51, describing the Geon range of PVC raw materials.*

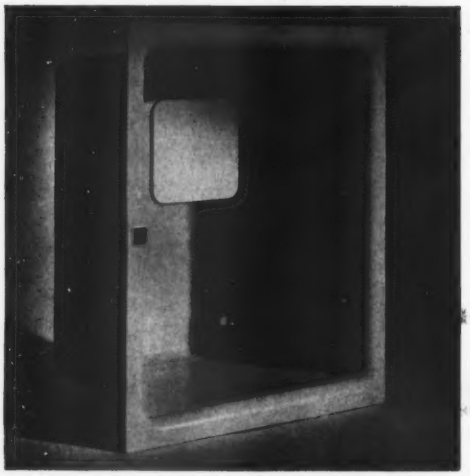
THE sea-spray and sunshine enjoyed by passengers on this ferry can't do the leathercloth upholstery any harm—because it's made with Geon PVC. There will be no fading or staining, it will stand up to tremendous hard wear and needs only an occasional wipe with a damp cloth to keep it clean. These properties are inherent characteristics of Geon PVC. Materials made with this plastics raw material—which is fire-resistant—are particularly suitable for ship-board use, and can be obtained in many forms, including leathercloth for upholstery or panelling, curtaining, floorcoverings, weatherproof clothing and electric wiring.

The Lulta Seating illustrated is made by Latex Upholstery Ltd., using "Everflex" leathercloth made with Geon PVC, manufactured by Messrs. Bernard Wardle (Everflex) Limited.

Geon
Polyvinyl Materials

BRITISH GEON LIMITED

SALES AND TECHNICAL SERVICE : 21, St. James's Square, London, S.W.1. *Telephone: Whitehall* 9561. "Geon" is a Reg'd Trade Mark



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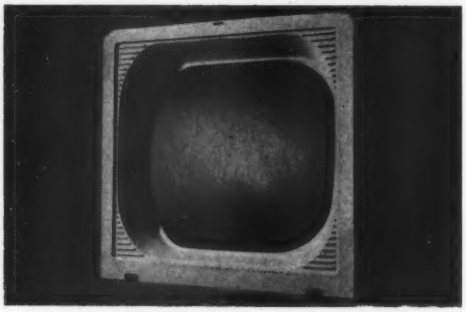

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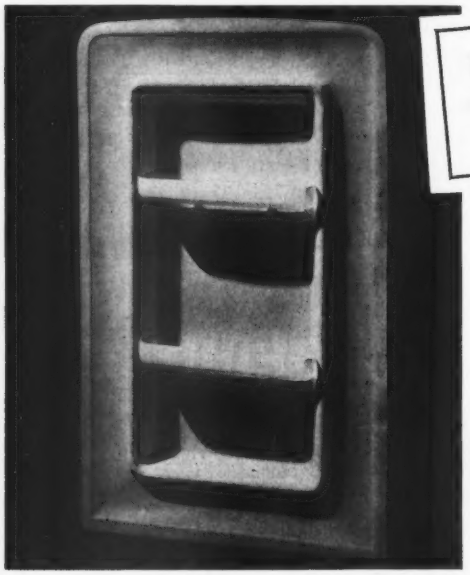

4

VITRONE P.V.C. * plastic sheeting . . .

is an easily formed material, as can be seen from the illustrations shown here of various components made from it. It is most economical in use, calling for low tooling costs, and is tough, non-corrosive and non-inflammable. Among its many uses it is ideal for:—

Refrigerators

Chemical Plant

Printing Plates

Radio and Television Components

Outdoor signs and displays

Deep draw mouldings, etc.

VITRONE RIGID P.V.C.

is available in sheets up to 144″ × 36″ and thicknesses from .010″ upwards — mirror finished, satin or matt surfaces. Please send for samples.

STANLEY SMITH and COMPANY

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*

1 Interior of Refrigerator.

2 Mask for Television Receiving Set.

3 Deep drawn dish.

4 Refrigerator door lining with moulded shelves riveted in position.

RIGID P.V.C. EXTRUSIONS to your requirements in all shapes and sections. Also "Vitrathene" Polythene sheeting, Rods, Tubes and Blocks.

NEW WORK FOR OLD FRIENDS

A balance to our credit

It was in 1938 that Geo. Salter & Co. Ltd., of West Bromwich, first approached us with a request to mould a domestic scale. The pattern was similar to that already being made in sheet metal and comprised 4 separate mouldings. A standard thermosetting material was chosen and we continued to mould the scale in quantity for 15 years.

Then, in 1952, our customer decided to develop a new domestic scale and asked for our help to produce their design as a moulding. The new No. 59 Balance was the result of using improved techniques and materials perfected during the intervening years. The body, lens and scoop are injection moulded in Polystyrene. This is but one of the many examples of how Streetly Service has satisfied Old Friends.

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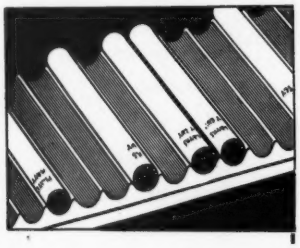
THERMO-PLASTIC INJECTION MOULDING MACHINES

MACHINE OF $^{2}/_{3}$ oz. CAPACITY **£45** COMPLETE

WRITE FOR DETAILS

another packaging problem sent packing—with plastics!



Note how the individual flutes cuddle each cigarette and preserves its shape. A special technique had to be evolved to secure the plastic mat to the carrier ; 18 heat-sealed lugs that hold it firmly without metal fixtures.

If you think plastics might help in your difficulties—consult us. For over 30 years we have been evolving new techniques for solving problems with moulded plastics.

During their manufacture, cigarettes are cut from long cylinders to final lengths and stacked 20 layers deep in a carrier for conveying to the boxing machine. But cigarettes stacked like that make some weight . . . . the bottom layer tended to flatten . . . . and in automatic packing that meant trouble. The slight distortion sometimes prevented the cigarettes from entering the cartons smoothly—causing stoppages of the whole machine. Asked to help, we experimented and then made a plastic mat for the bottom of the aluminium carrier. Fluted to cradle the bottom layer of cigarettes, this effectively kept their shape. So no more flattened cigarettes, no stoppages; a smoothly operating process—by using moulded plastics; and a flair for problem solving.

Some of the machines in our injection moulding works at Summer Lane.

One of the three bays in our compression moulding works at Cheapside.

E. Elliott LIMITED
THE MOULDERS WITH THE ENGINEERING BACKGROUND

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If it's mouldable — Ebonestos can mould it

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MOULDERS IN ALL PLASTIC MATERIALS AND EBONESTOS SPECIAL COMPOSITIONS

EXCELSIOR WORKS, ROLLINS STREET, NEW CROSS, LONDON, S.E.15

New Cross 2080 (20 lines)

I.C.I. PLASTICS

Serve the Shopfitter

A revealing example of the way in which plastics play their part in modern shopfitting is this new Sainsbury* self-service store at Eastbourne. Versatile, shatter-proof 'Perspex' sheet—clear and coloured—is put to good use in the counter display shields, the windows and surrounds of the refrigerated cabinets, and the egg and tea containers. The diffusing covers of the fluorescent lighting units are in opal 'Perspex', while corrugated 'Perspex' has been cleverly used for the egg display racks.

Other I.C.I. plastics at the shopfitter's service include 'Darvic' rigid p.v.c. for display signs and fittings, and 'Mouldrite' phenol and urea formaldehyde moulding powders for robust, colourful moulded products, while there are numberless other display uses for 'Perspex' itself.

* Equipment shown includes material patented, and designs registered, by Messrs. J. Sainsburys.

'Darvic','Perspex' and 'Mouldrite' are registered trade marks, the property of Imperial Chemical Industries Ltd.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1
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P.545

B

CRAYMAC brings a new range in

Texturised finishes

They give that silky, luxurious look that's the basis of the new glamour in rainwear. In six muted shades the new Craymac P.V.C. sheeting is really strong—can be welded or sewn and styled at will.

WRITE NOW FOR PATTERN FOLDER

Rainwear stylists and users of P.V.C. sheeting are invited to send for a new shade folder. Samples of all shades and gauges in translucent, opaque, metallic or laminates gladly sent on request.

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St. Mary Cray, Kent, England.
Telephones · Ravensbourne 4674/5 & Orpington 5671.

'Craymac' is manufactured to British Standards Institute Specification No. 1763 by one of Britain's largest producers of P.V.C. sheeting.

Serial No ★ 1923
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P.V.C Plastic Sheeting

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Boiler Drums and Pressure Vessels

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WINDSOR

single stage multi-screw

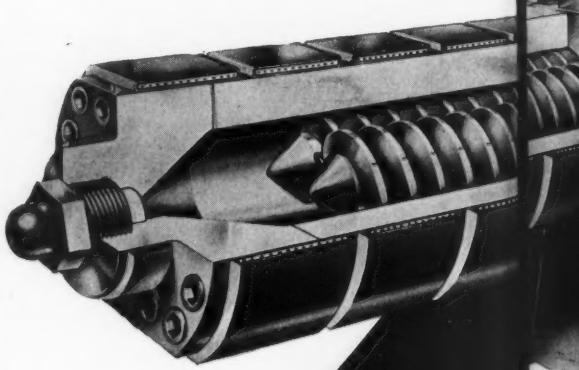
PRE-PLASTICISER

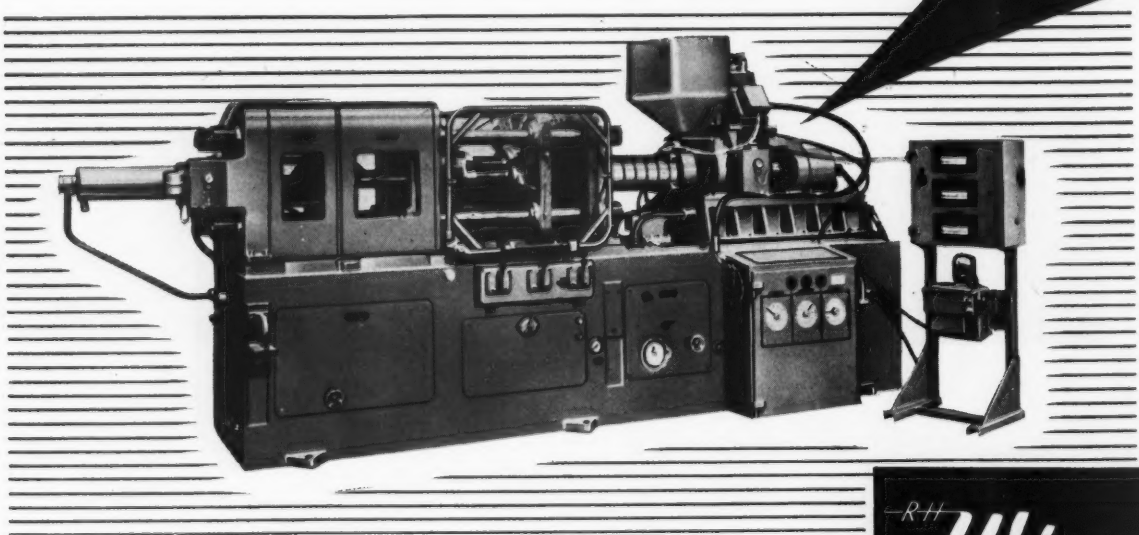
With the increasing demand for larger and yet larger mouldings which bring with them the problems of internal stresses and high wastage, these machines with the unique single-stage, multi-screw pre-plasticising unit enable production engineers to successfully produce strain-free large area mouldings.

The 1044 AUTOPLAS with an injection capacity of 44 cub. in. (32-oz. C.A.) has the well known long toggle mechanism exerting 350 tons clamp pressure. This new model retains the old features of the famous S.H.8/10 injection moulding machine such as, platen area 29″×25″ and the 25 h.p. motor drive, whilst giving a trebled capacity.

The 2044 AUTOPLAS again offers 44 cub. in. injection capacity, but has a large powerful toggle unit giving a 600 ton lock, and platen area of 38″×34″.

This machine, due to its efficient principle, requires only a 25 h.p. motor, and provides industry with a machine at half the horse power normally required on equivalent conventional machines of this size.





R.C. 6
This is
screw
speed
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hourly
65 lb.
automa
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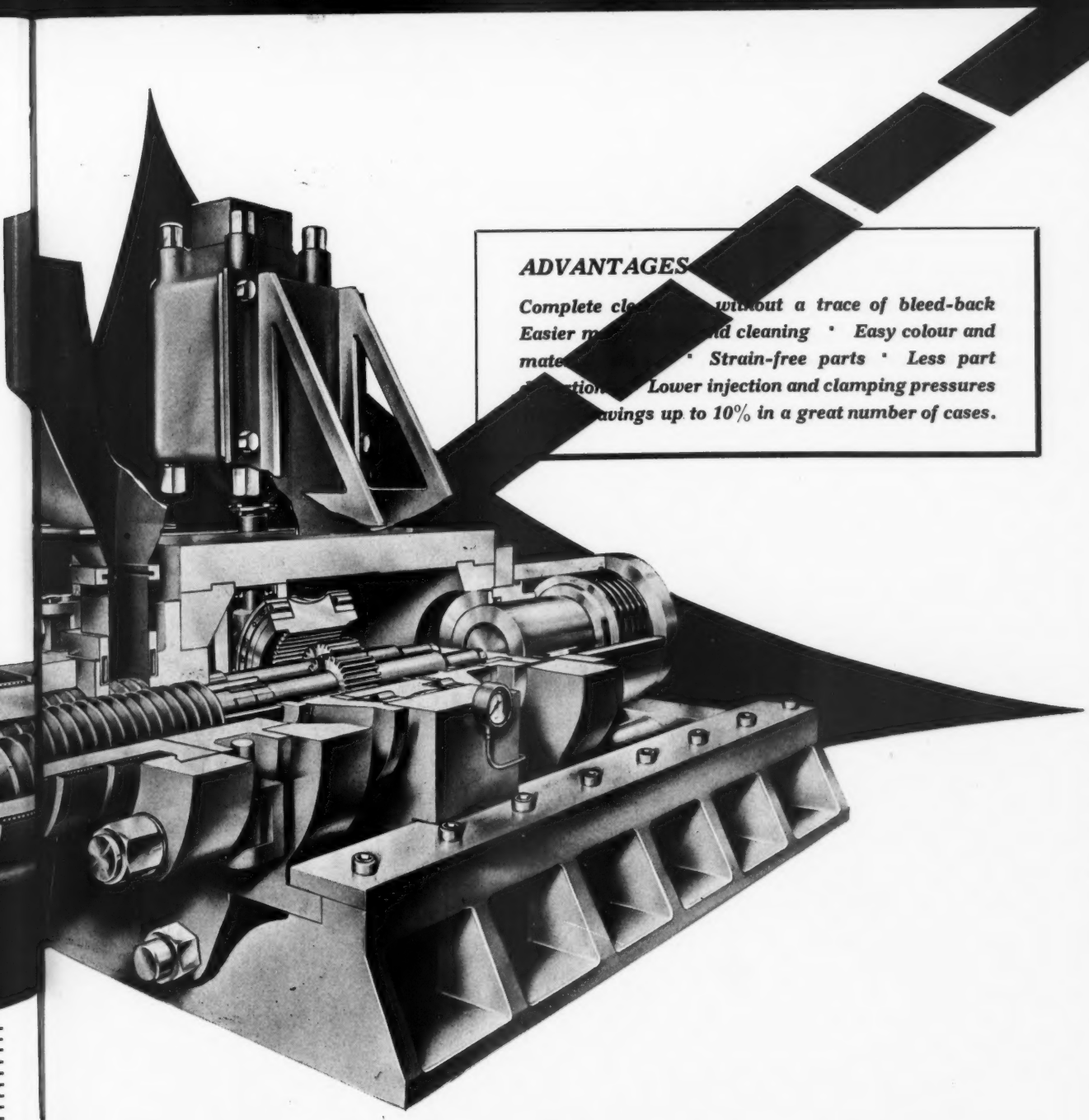
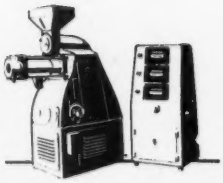
R.H. Winds



ADVANTAGES

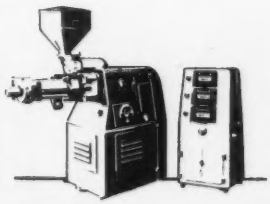
Complete cle… without a trace of bleed-back Easier m… d cleaning · Easy colour and mate… · Strain-free parts · Less part …tion… Lower injection and clamping pressures …avings up to 10% in a great number of cases.

R.C. 65



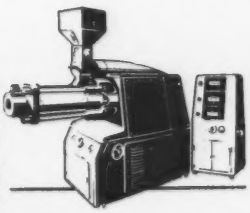
This is a twin-screw variable speed extrusion and compounding machine with an hourly output of 65 lb. plus. An automatic feeding device for metering plastic material to the extrusion screws is incorporated and automatic heating regulation is provided.

R.C. 100



The R.C. 100 twin-screw machine is a medium capacity extruder with a nominal output of 100 lb. per hour and will operate continuously over long periods, producing tubes, rods aud sections in thermoplastic materials. Coated cables, rods and tubes are standard jobs.

R.C. 200



Three screws provide this heavy duty machine with exceptional mixing powers. With a nominal output of 200 lb. per hour, constant extrusion pressures, and trouble free operation, it satisfies the demand for a multi-screw machine of really high output.

LEATHERHEAD ROAD, SOUTH CHESSINGTON, SURREY

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any colour, any shape!

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*(*Registered Trade Mark)*

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In association with: Monsanto Chemical Company, St. Louis, U.S.A., Monsanto Canada Ltd., Montreal, Monsanto Chemicals (Australia) Ltd., Melbourne, Monsanto Chemicals of India Ltd., Bombay. Representatives in the world's principal cities.

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We can, as specialists, produce custom injection mouldings of any kind up to 16 ozs. for any industry—Automobile, Radio, Radar, Aeronautical, Marine, Fancy Goods, Cosmetics, etc., in Polystyrene, Cellulose Acetate, Diakon, Polythene, Nylon, etc. Our Planning Department, Technical and Advisory staff are at your service.

IM35

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AND STAYING THERE!

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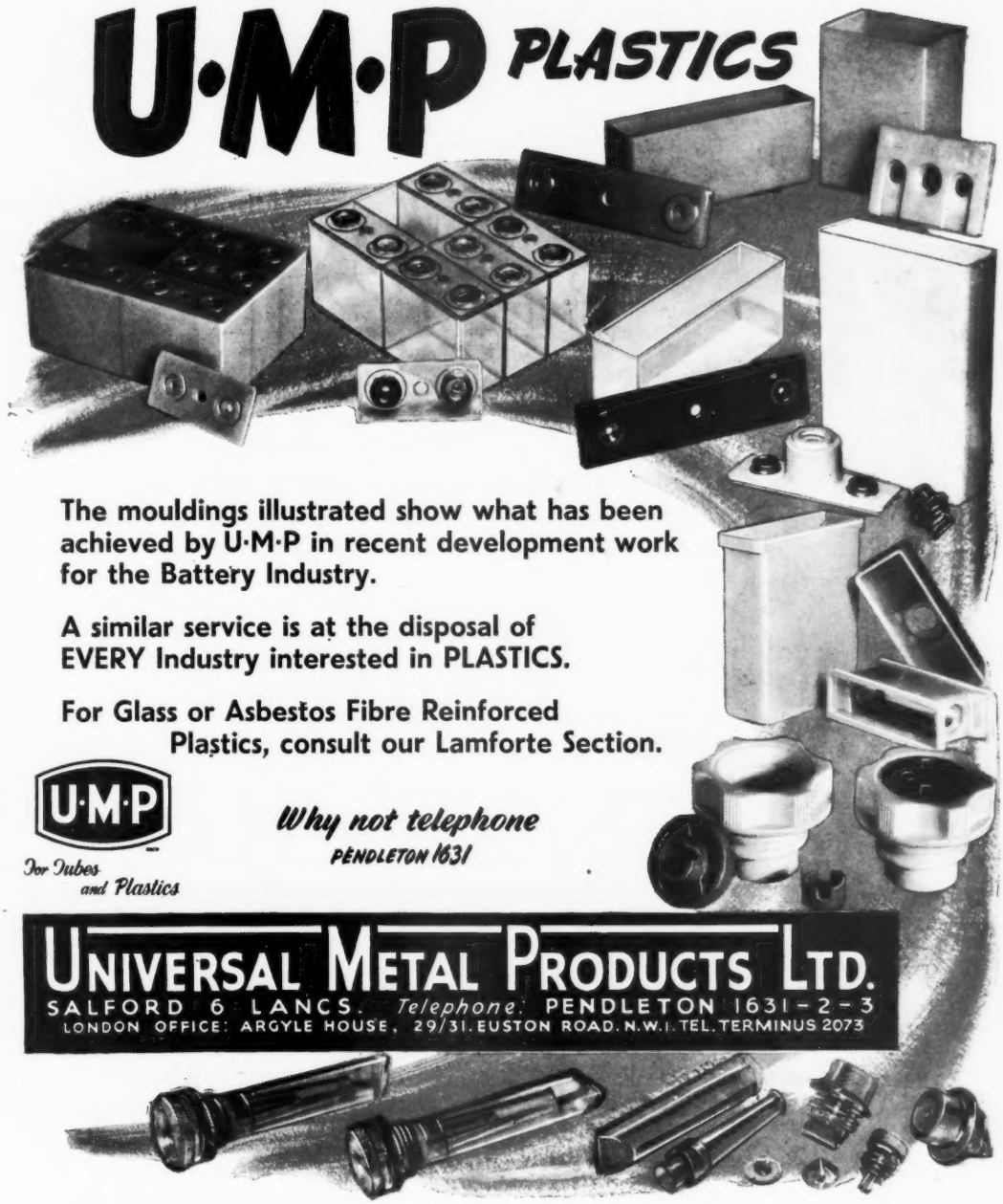

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The saw holders which swivel may be fixed in any position, they take saw blades up to ¼" in width and will hold flat and round shank files.

THE ONLY MACHINE THAT MAY BE ADAPTED TO ANY SIZE OF JOB AND ANY CUTTING LENGTH AND WIDTH

Length of table 3' 3", width of table, 10½", distance from bridge to table 5½" cutting height 1¾", swing around saw blade 16½" and 23½" respectively. Distance between back of saw blade and line drawn within gaps of brackets 13" approx. Length of saw blade to be used 5" or 6". Floor space 2' by 3' 6". The machine is supplied ready for immediate use.

THE MACHINE FOR CUTTING THE FOLLOWING MATERIALS TO ANY SHAPE

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We make compounds for... Petrol resistant extrusions. Non-toxic extrusions. Rigid anti-shatter extrusions. Dielectric, direct insulation and sheathing purposes. High clarity extrusions. General purpose extrusions. Gramophone records.

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V36

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QUICKER because many free-flowing materials can be moved faster pneumatically.

CHEAPER because pneumatic plant frequently needs less labour and less space than mechanical systems, thereby reducing overheads and building costs.

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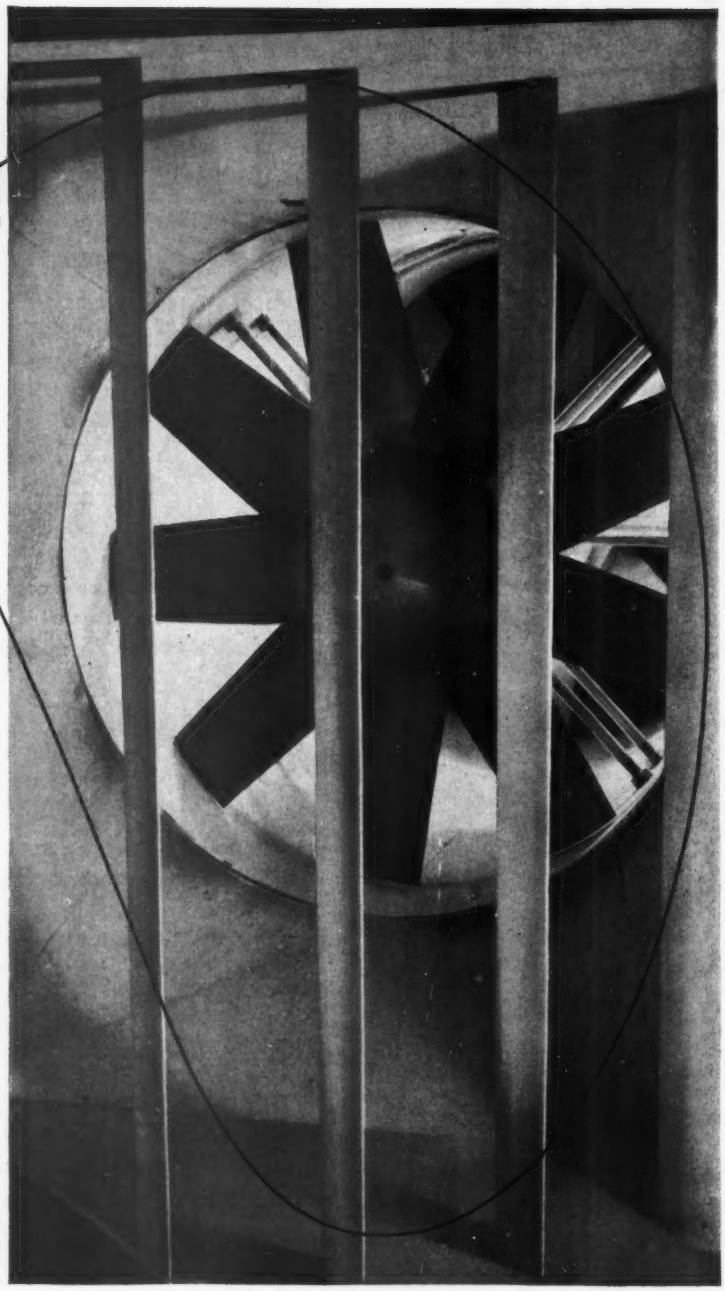
We will be happy to discuss YOUR conveying problems and, if you care to visit our experimental plant at Cheadle Heath, to show you the Simon pneumatic systems in operation.



An Axial Flow Fan installed in the Simon low pressure pneumatic conveying system, with special guide vanes to provide a uniform flow of air.

Industrial plant by **Henry Simon Ltd**

SIMON ENGINEERING GROUP

H.S. 145

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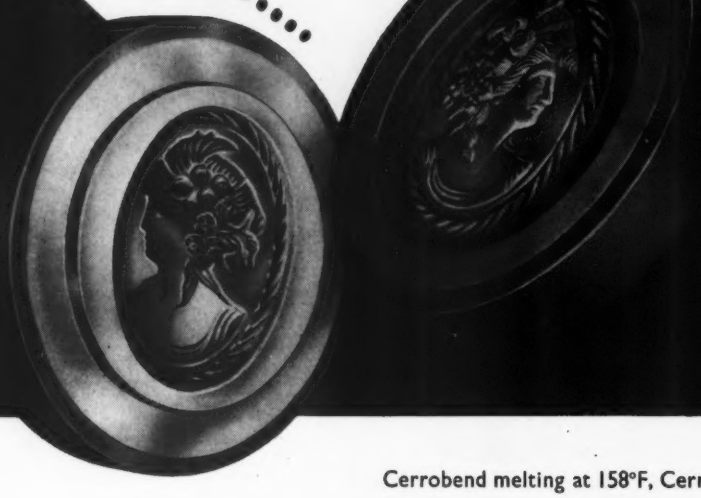

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Cerrobend melting at 158°F, Cerrobase at 255°F and Cerrotru at 281°F are easily sprayed against master models with inexpensive equipment. The resultant negative cavity, reproducing the finest detail, provides excellent mould for short runs in thermoplastics. After use moulds may be re-melted and metal fully recovered.

★ Technical advice in selection and application of correct alloy to suit your problem available on request.

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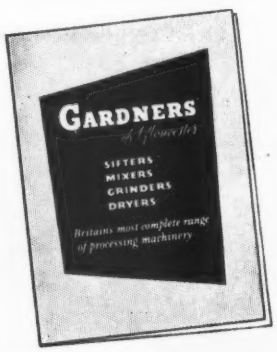
If you have to

GRIND IT . . . SIFT IT,

MIX IT . . . . or DRY IT . . . .

talk to GARDNERS of Gloucester



This attractive new folder describes 22 types of Gardner sifting, mixing, drying and grinding machines. Send for your copy today.

IT might be a standard Gardner grinder, mixer, sifter or dryer. You have Britain's widest range of machines to choose from. Or it might need some special features to suit your process. It might even have to be a special job entirely. But you'll get the right machine from Gardners of Gloucester. Send in sample materials for a confidential test report and recommendations on the right machine for the job. It's the *quickest*, surest way to solve a processing problem.

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We have come a long way since bathrooms were a luxury and, indeed, extremely rare. *Modern* household fittings are just one of the many applications of

Erinoid 2 C.L. GRADE POLYSTYRENE

This high viscosity grade polystyrene has been specially designed for use where a tougher material than ordinary polystyrene is required. It offers the following important advantages:

Standard price level.

50% stronger than general purpose polystyrene.

Available in any colour and in crystal clear.

Particularly suitable for mouldings of thin section.

These self-adhesive household fittings are moulded in Erinoid Polystyrene, 2. C.L. Grade, by Craxfords (Ramsgate) Ltd.

Erinoid polystyrene is manufactured by

STYRENE PRODUCTS LIMITED

Full information, samples, prices, etc. on application to Marketing Agents:

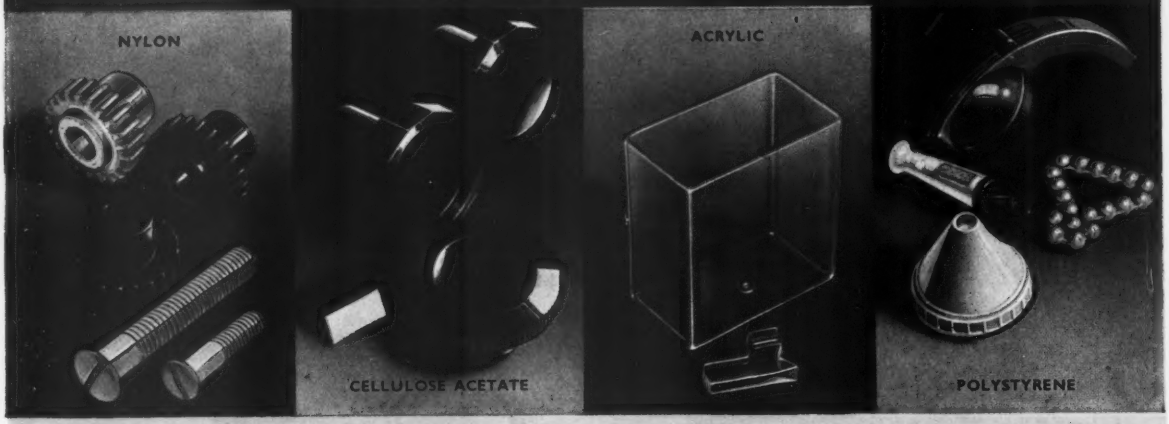
ERINOID LIMITED · STROUD · GLOUCESTERSHIRE

TELEPHONE: STROUD 810

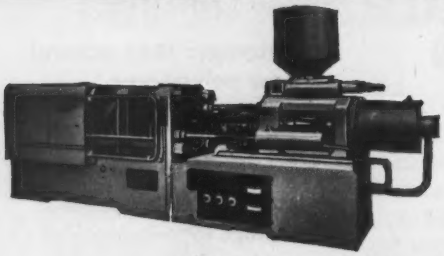
LONDON OFFICE: 96 PICCADILLY · LONDON · W.1 · TELEPHONE: GROSVENOR 7111

D

Insulators Ltd



injection mouldings



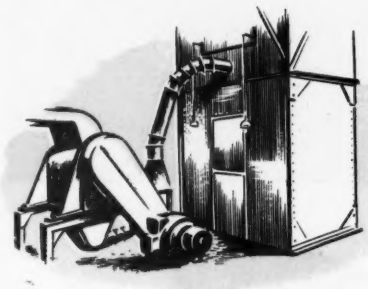
INJECTION MOULDING MACHINE

Insulators Limited are fully equipped to supply INJECTION MOULDINGS in quantity in the widest variety of materials and designs using modern plant and equipment with machine capacity ranging from 1–32 ozs.
Illustrated above are a few examples of the extensive range of Thermoplastic materials in which Insulators Limited produce components. Their experience extends over 25 years and embraces every branch of plastic moulding technique. All the unique skill and comprehensive technical knowledge of Insulators Limited are at your disposal.
Inquiries are invited and will receive prompt attention.

INSULATORS LTD., LEOPOLD RD., ANGEL RD., EDMONTON, LONDON, N.18
BRANCH FACTORIES: JARROW, DURHAM, AND PADDOCK WOOD, KENT
Telephone: Tottenham 1491 *Telegrams: Mermould, Southtot, London*

GOOD MIXERS

According to Jupiter, Juno, Hercules and Venus etc., we are far too "*pernickety*" in our methods of production. They still can't comprehend *why* we use one type of Plant for Grinding and Sieving of our wood-filled Powders, and a totally different apparatus for cotton-filled—such as our A.645 . . . nor why, in the latter, we employ Cyclones and Filters to extract any dust when the rude winds of Boreas would do the job free.



Although they have their own social grades in their celestial society, they consider we pamper mortal Moulding firms in offering such a wide range of alternative Powders. Jupiter, who during his visit has accidently picked up a bit of slang in mistake for another wife, says—

"*Mix all your Powders together into one grade and let Moulders 'lump it'.*"

If our Customers agree, that will save us a lot of trouble.

RX YOU'RE RIGHT WITH 'NESTORITE'

JAMES FERGUSON & SONS LTD.
LEA PARK WORKS, PRINCE GEORGE'S RD., MERTON ABBEY, LONDON S.W.19.
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Stabilisers for PVC

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BASIC LEAD CARBONATE

—specially prepared for P.V.C., supplied only as dispersed paste with Plasticisers to choice.

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LEAD STEARATE

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A complete system available for heat, light and dielectric requirements

With the exception of White Lead (Basic Lead Carbonate), these Stabiliser/Lubricants are supplied dry, or as non-settling dispersions which facilitate easy mixing and efficient intimate contact with P.V.C.

ASSOCIATED LEAD MANUFACTURERS LIMITED

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1946—5 Tons 1953—500 Tons

Waste now plays an important part in the industry to augment, at a lower cost, the supplies of virgin raw materials. As specialists in plastic scrap recovery we can help you by keeping your works clear and assisting in providing cheaper grade materials for the purposes for which they are suitable.

Michael S. Stevens

will give you a personal service for specialised advice and guidance, reliable collection, delivery and fair prices for any type of scrap.

WORKS

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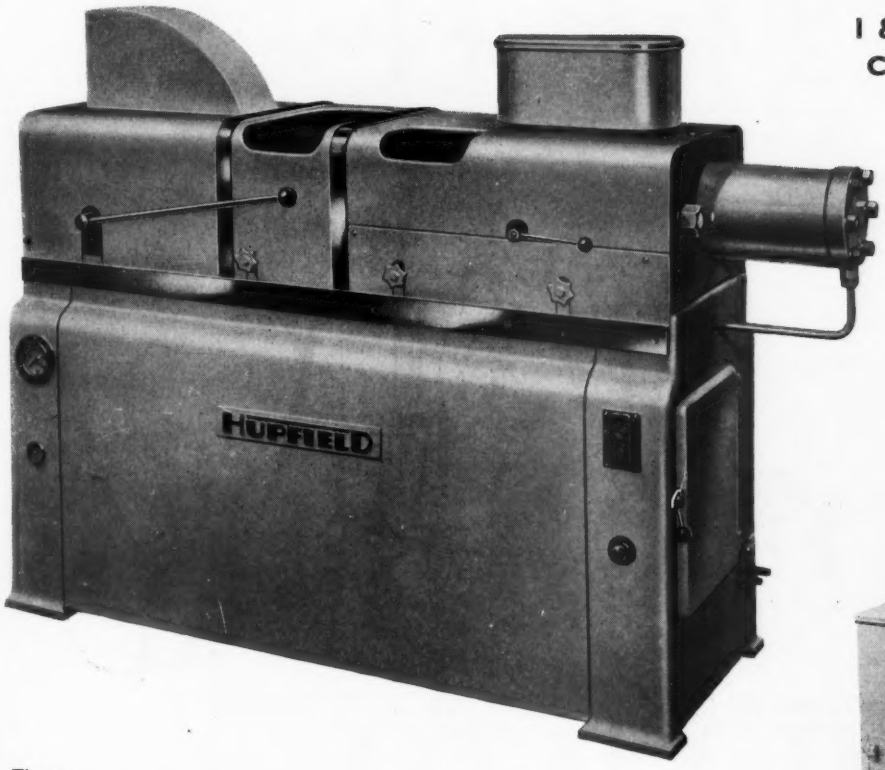
HUPFIELD *Plastics*

INJECTION MOULDING MACHINES FOR ECONOMICAL PRODUCTION

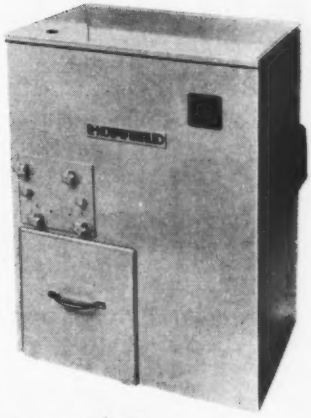
1 & 2 OUNCE CAPACITIES



These low priced hydraulic operated moulding machines, are designed for the rapid production of thermo-plastic mouldings on a low cost basis. Being operated by a single lever they are simple to use, ideal for female labour. Fitted with compensating feed mechanism and the latest Tem-Con automatic temperature control. All parts are standardized.

Completely self-contained with electric motor.

Machine moulding capacity	1 oz.	2 oz.
Moulding area up to	12 sq. in.	22 sq. in.
Plasticizing capacity per hour	11 lb.	22 lb.
Shots, subject to mould design	350 per hr.	250 per hr.



This fully enclosed machine will granulate any type of thermo-plastic material, is very rapid and smooth in action. The cutting blades are adjustable and can be very quickly cleaned. Completely self-contained with 2 H.P. electric motor.

Write for particulars, or telephone our Works (Wordsworth 4488) for a demonstration.

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DALSTON GARDENS · STANMORE · MIDDLESEX · ENGLAND

HOT ON THE TRAIL

Are you harbouring scrap P.V.C., Cellulose Acetate, Polyethylene, Polystyrene or "Perspex"? We welcome all clues that lead us to these, or any kind of thermoplastic scrap and surplus material. Let us know the kinds and quantities you have to offer.

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A223

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we have supplied many of the leading Plastics Manufacturers with high-grade moulding machines and equipment

OUR RANGE INCLUDES . . . .

COMPRESSION MOULDINGS

DANIELS

DOWNSTROKE PRESSES

UPSTROKE PRESSES

SIDE-RAM PRESSES

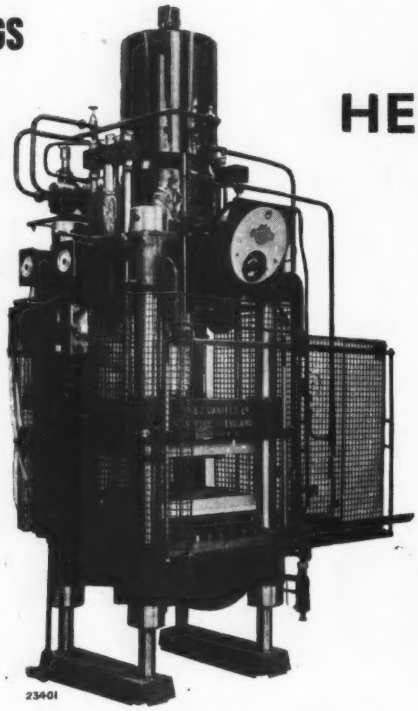
PREFORMING MACHINES

HOBBING MACHINES

PREHEATING OVENS

TAVANNES

5-TON AUTOMATIC MACHINE



DANIELS 150 TON DOWNSTROKE MOULDING PRESS

INJECTION MOULDING

HERBERT/REED-PRENTICE

5A-4 oz. and 10D-8 oz. FULLY AUTOMATIC MACHINES

EDGWICK

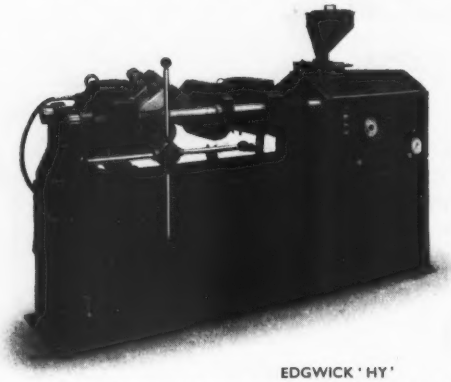
2 oz. SEMI- or FULLY-AUTOMATIC MACHINES

ACCESSORIES

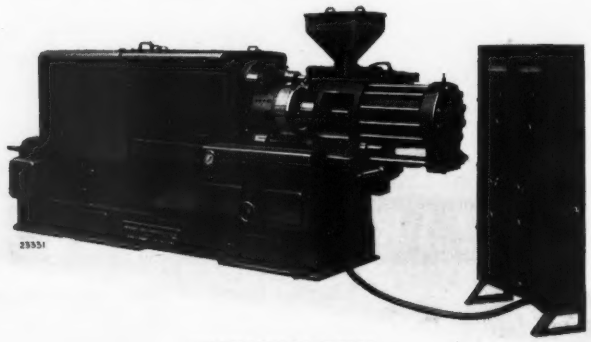
PUMPS, VALVES, CONTROL GEARS MOULDS AND DIES TO ORDER

WEIGHING MACHINE

OSBORN AUTOMATIC WEIGHING MACHINE FOR PLASTIC POWDERS AND PELLETS



EDGWICK 'HY' SEMI-AUTOMATIC INJECTION MOULDING MACHINE



HERBERT/REED-PRENTICE 10D-8 oz. FULLY-AUTOMATIC INJECTION MOULDING MACHINE

SOLE AGENTS :— **. . . . LET US SOLVE YOUR MOULDING PROBLEMS**

ALFRED HERBERT LTD

FACTORED DIVISION · RED LANE WORKS · COVENTRY **PHONE 89221**

REGISTERED TRADE MARK

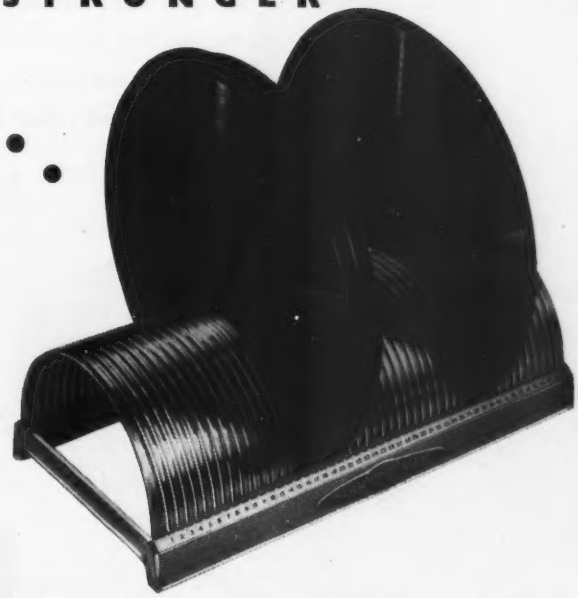
DISTRENE

POLYSTYRENE
MOULDING MATERIALS

POLYSTYRENE

MAKES THIS DISK-RAK

STRONGER

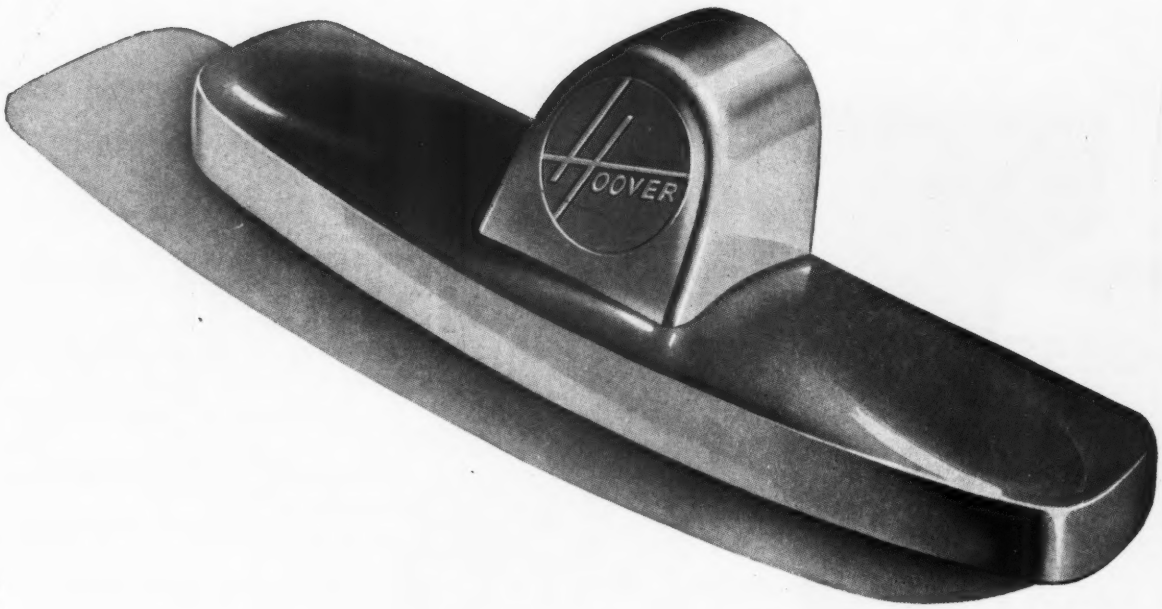


Strength, dimensional stability and outstandingly good flow characteristics were pre-requisites of the moulding material for this 48-record storage rack.

DISTRENE 100 polystyrene moulding powder—selected to overcome weld and flow lines—met *all* the requirements for producing this intricate one-piece unit able to withstand day-to-day breakage hazards. Distrene 100 is polystyrene with exceptional strength at no extra cost—and meets B.S.1493. It is suitable for injection machines of all types and capacities. Please write for Leaflet A.

BRP **BRITISH RESIN PRODUCTS LTD.** *Sales and Technical Service:*
21 St. James's Square · London · S·W·1 Telephone: Whitehall 8021

The Disk-Rak, moulded in Distrene 100, is made by Thames Valley Moulders Ltd. and marketed by Selcol Products Ltd.



TOUGH, *but they come clean!*

These injection mouldings for the new Hoover cleaner are themselves noteworthy for their clean, highly polished finish. Yet neither was in fact 'finished'—they came clean and lustrous straight from the tools. Both floor brush nozzle and hose grip are tough, supple and resilient, incapable of scratching furniture or fingers; and both were tooled and moulded by Ekco, whose experience, skill and resources are equal to every plastic proposition.

Consult Ekco Plastics!

• *B.I.F. Stand A320. May 3rd - 14th, Birmingham*

Technically speaking

These mouldings are of Polyvinyal Acetate. A high resin content filled material was formulated to give a high polish without the need for finishing. All moulding faces of the tools were brass to prevent staining, the rest being nickel chrome steel to withstand the high pressures involved.

EKCO

PLASTICS FOR INDUSTRY

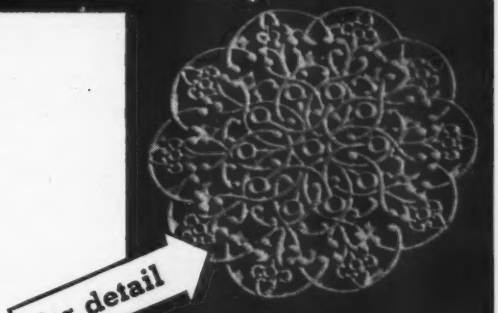
Write for a copy of the Ekco Standard Mouldings catalogue

E. K. COLE LTD. (PLASTICS DIVISION), SOUTHEND-ON-SEA, ESSEX

(Members of the British Plastics Federation)

Six advantages for Vacuum forming with 'Cellastine'

Acetate Sheeting



1. Accurate reproduction of mould detail.
2. Generous depth of draw.
3. High lustre finish.
4. Choice of colours or transparent.
5. Economical Production.
6. Quick cementing.

'Cellastine' is tough, resilient, lightweight, washable and printable.

'Cellastine'
TRADE MARK

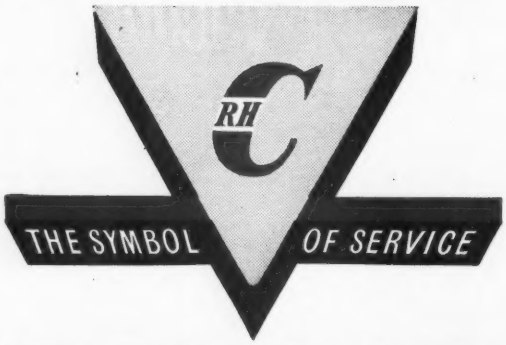
Acetate Sheeting

Demonstrations can be arranged by appointment. Enquiries to:

BRITISH CELANESE LIMITED

Plastics Division Celanese House, Hanover Square, London, W.1.

R.H.C. PRODUCTS



A Most Comprehensive Range of Raw Materials for the Plastics Industry

As Specialists of long standing in raw materials for Plastics we feel the time has come to list briefly our range of products. The range, always comprehensive, has increased recently to a remarkable extent in pace with the latest technical developments.

STYRON 475 SHEETING	For forming by conventional methods.
STYRON **666 General Purpose** **777 Medium Impact** **475 High Impact** **700 Heat Resistant** **637 Light Stabilised**	For injection and compression moulding and extrusion.
CELLULOSE ACETATE MOULDING POWDER	In a range of colours for injection moulding.
METHYL METHACRYLATE POLYMERS & MONOMER	Glass clear, light stable inert. For surface coatings and dental purposes.
VINYL CHLORIDE POLYMERS AND CO-POLYMERS	Compounds for calendering, injection and extrusion.
CELLULOSE ACETATE BUTYRATE MOULDING COMPOUNDS	Injection and extrusion.
TRIFLUORO-MONO-CHLORO ETHYLENE (Fluorinated high Polymer Hydrocarbons)	Moulded goods. For high electrical properties, chemical resistance, etc.
POLYALCOHOLS AND ISOCYANATES	Cross linked light density products. For expanded plastics acoustic and thermo-electrical applications.
ORGANIC PEROXIDES AND PER-ACIDS	Polymerisation catalysts.
ADHESIVES	For Plastics.

RHC POLYSTYRENE MOULDING GRANULES	For injection and compression moulding and extrusion.
STYRENE MONOMER	Glass clear, light stable. Heat sensitive. For Polymerisation in the manufacture of plastics, laminating and sealing compounds, co-polymers, etc.
CELLULOSE ACETATE FLAKE	For the manufacture of moulding powders, lacquers, strippers, foils and sheeting.
POLYAMIDE MOULDING COMPOUNDS	For injection and extrusion.
POLYAMIDE FOILS	For industrial and domestic packaging.
POLYURETHANE MOULDING COMPOUNDS	For extrusion and injection for articles having high mechanical qualities.
ACETO BUTYRATE FOIL (ELECTRICAL INSULATING)	For cable and wire wrapping. Insulating.
POLYESTER RESINS (COLD SETTING AND HEAT HARDENING TYPES)	For impregnating glass fabrics, potted circuits, etc.
TOMLINITE LIGNIN POWDER	Colour: dark brown. Reinforcing agent filler-extender for Phenolic resins, laminates, etc.
THERMOCHROM CRAYONS (TEMPERATURE INDICATORS)	Temperature indicators for machinery heating systems, etc. Rapid and distinct colour change.
THERMOCOLOUR POWDERS	Uses as above. Soluble in industrial methylated spirit.

TRADE GRINDING AND RECLAMATION SERVICE. Complete modern equipment, particularly adapted for the requirements of the Plastics Industry.

In addition to our own manufacturing activities we are Concessionaires for twenty manufacturers of highest repute at home and abroad, thus, in effect, all products are supplied by us at FIRST HAND.

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"SPEEDICUT"
Speedy Delivery, Speedy Performance
F B T
FIRTH BROWN TOOLS LTD.
SPEEDICUT WORKS, CARLISLE STREET EAST,
SHEFFIELD.

Believe it or not - this is POLYSTYRENE! but with a difference - it's Kleestron D.S.

BEND IT!
– it's flexible

DROP IT!
– it's really tough

DRIVE NAILS THROUGH IT
– it won't shatter

CUT IT WITH SCISSORS!
– it's "splitproof"

. . . and it does not pick up dust like ordinary polystyrene

KLEESTRON D.S.
IT'S
DE-STATICIZED

This is polystyrene with a difference—Kleestron Limited's exclusive new patented 'D.S.' formula. It's FLEXIBLE . . . can be bent and cut without shattering, can have nails driven into it. It's DE-STATICIZED . . . won't hold a surface charge of static electricity and so can't attract atmospheric dust like ordinary polystyrene. See what this means? Moulded polystyrene goods that are tougher than ever before . . . goods that don't get that "dust-encrusted" look, that are easy to keep clean . . . goods that stand up to everyday knocks and shocks. Kleestron 'D.S.' is a real advance in plastics practice—is good news for manufacturer, retailer and customer alike.

WHAT YOU NEED TO KNOW ABOUT *Kleestron D.S.*

- It is tougher than ordinary polystyrene and far more flexible
- It will not retain electrostatic charges, so cannot attract and hold dust particles.
- It has the same impact strength as ordinary polystyrene, but a lower (yet adequate) tensile strength.
- Its improved ductility permits the moulding of undercuts, threads and inserts which would normally be extremely difficult.
- It is, in its natural state, an opaque white material.

IT COSTS NO MORE IN USE THAN ORDINARY POLYSTYRENE

MOULDING NOTES

KLEESTRON 'D.S.' flows at lower temperatures than normal, tends to discolour at high temperatures (the range 350° - 500° F. should prove suitable). Generally, a reduction of 50° F. in the cylinder temperature together with an increase in pressure gives satisfactory results. It may be possible to reduce cycle times; and, certainly, mould release should be improved. **NO MODIFICATIONS ARE NEEDED IN MACHINE OR MOULD.**

new, exclusive-formula

Kleestron D.S.

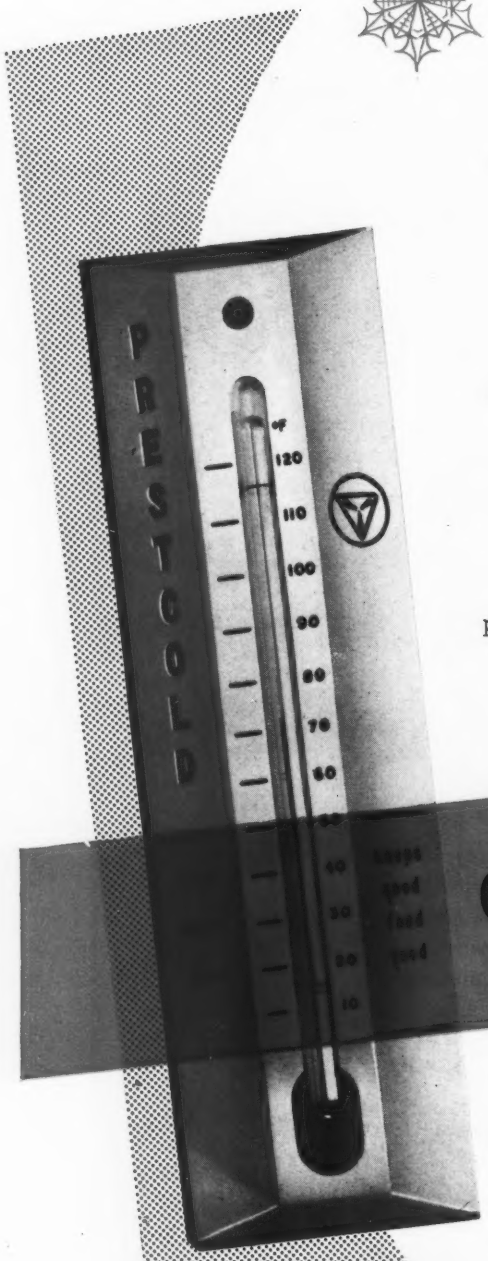
(PATENTED)

Costs no more in use than ordinary grades of polystyrene!

KLEESTRON 'D.S.' is supplied as opaque and pastel pellets. **Transparent colours and crystal clear are not yet available.**

KLEESTRON LIMITED WEST HALKIN HOUSE

WEST HALKIN STREET · LONDON SW1 · PHONE SLOANE 0866



You've reached the danger zone

when the kitchen thermometer tops 50°F;
food will only keep fresh at temperatures below that.
That's what you've got to stress if
you want to sell refrigerators.
The PRESSED STEEL COMPANY LIMITED wanted
an inexpensive thermometer—clean, easy to look at—
to sell the idea of their PRESTCOLD refrigerators
to the housewife. We of ROOTES designed
for them a 6-inch single-mould
plastic casing of white urea, inset with a thermometer
held unobtrusively by two patent steel clips

Cold, hard facts . . .

But then, that's our kind of job.
We are organised to deal with your plastics
problem from the idea to the finished
product stage, all under the one roof—
including the manufacture of the plastic mould.
Please call on us for quick, expert advice.

Contractors to M.O.S., Admiralty, etc., A.I.D. approved
SLOUGH · BUCKS · TELEPHONE: SLOUGH 22349

SMEES R106

ROOTES
MOULDINGS LTD

INJECTED or EXTRUDED

PECO MAKE THE MACHINES -THAT DO THE JOB

Illustrated literature is available on all PECO products and will be gladly sent on request.

Peco Injection Moulding Machinery is now well established throughout the world as equipment in which the best engineering skill and experience is combined with the latest developments in Plastic technology.
A recent addition to the PECO range of machines for the Plastics Industry is the 2½" Universal Extrusion Machine which is illustrated above. This machine aroused much interest at the 1953 Plastics Exhibition in London.

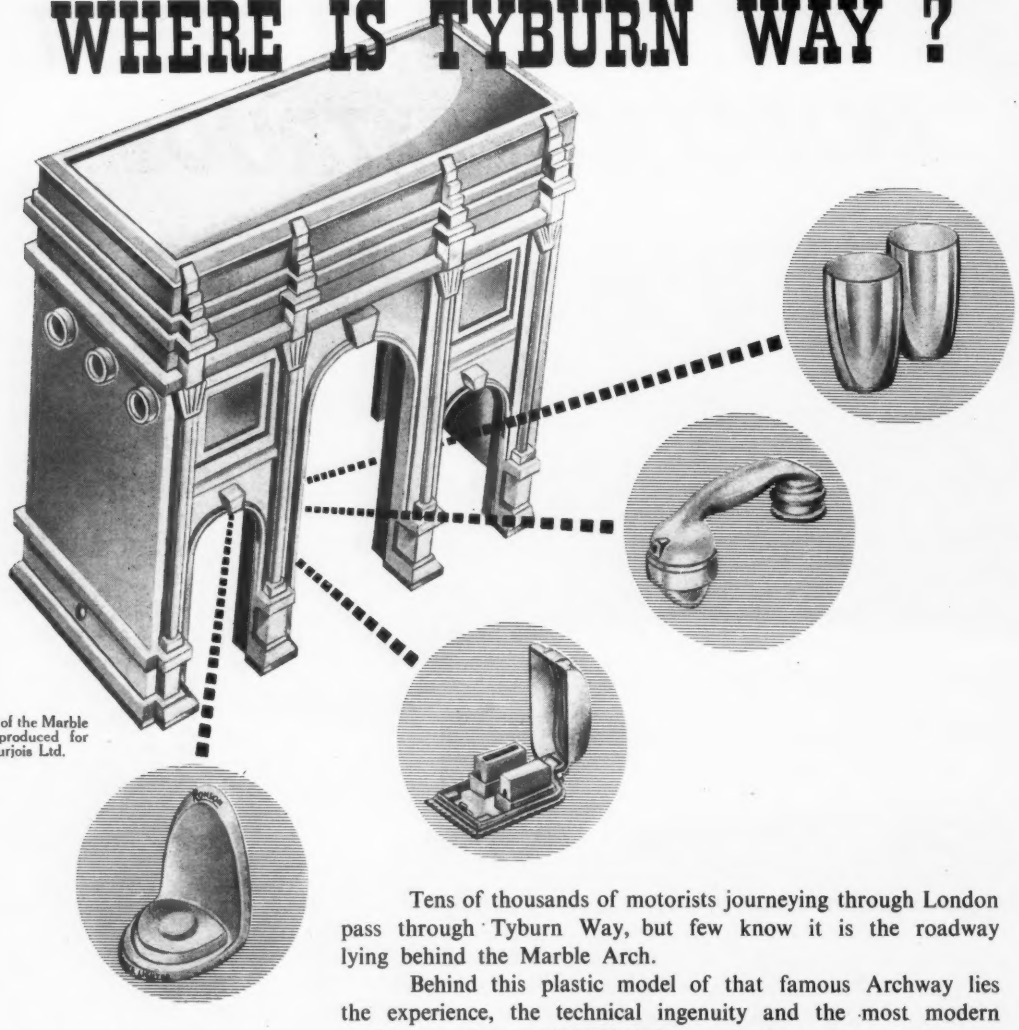
PECO PRODUCTS

Enquiries to:

PECO MACHINERY SALES (Westminster) LTD.

28, VICTORIA STREET :: LONDON, S.W.1. :: ENGLAND
Telephone: ABBey 1793/4/5 Telegrams: PROFECTUS, SOWEST LONDON Cables: PROFECTUS LONDON
Reg. Office and Works:
THE PROJECTILE & ENGINEERING COMPANY LTD ACRE STREET LONDON, S.W.8

WHERE IS TYBURN WAY ?



This model of the Marble Arch was produced for Messrs. Bourjois Ltd.

Phenolic and urea compression and Transfer moulding,
Injection moulding,
Sheet forming,
Fibre glass moulding.

Tens of thousands of motorists journeying through London pass through Tyburn Way, but few know it is the roadway lying behind the Marble Arch.

Behind this plastic model of that famous Archway lies the experience, the technical ingenuity and the most modern equipment of the PRESTWARE organisation, whose services are at your disposal.

Our Technical Advisory Division is waiting to solve your specific moulding problems. Our extensive knowledge can save you both time and money, we will design and manufacture for you the most intricate product, package, dispenser or component, with the finest of tolerances and of a reliability on which the House of PRESTWARE has built its high reputation.

20 Years of Excellent Service to Industry

Approved Suppliers to H.M. Government.

Prestware Ltd.

LOMBARD ROAD, LONDON, S.W.19. **Telephone : LIBerty 3421**

'LANCASTRIAN' MOULDING PRESS

The illustration shows one of our series of compression and transfer moulding presses which comprise 100, 150, 250, 400, 600 and 1,200 ton models. These presses can be fitted with core-pulling rams and other accessories and, together with the well-known 50-ton Fully Automatic Press, meet all normal requirements of the plastic moulder.

A standard range of presses is available for :—
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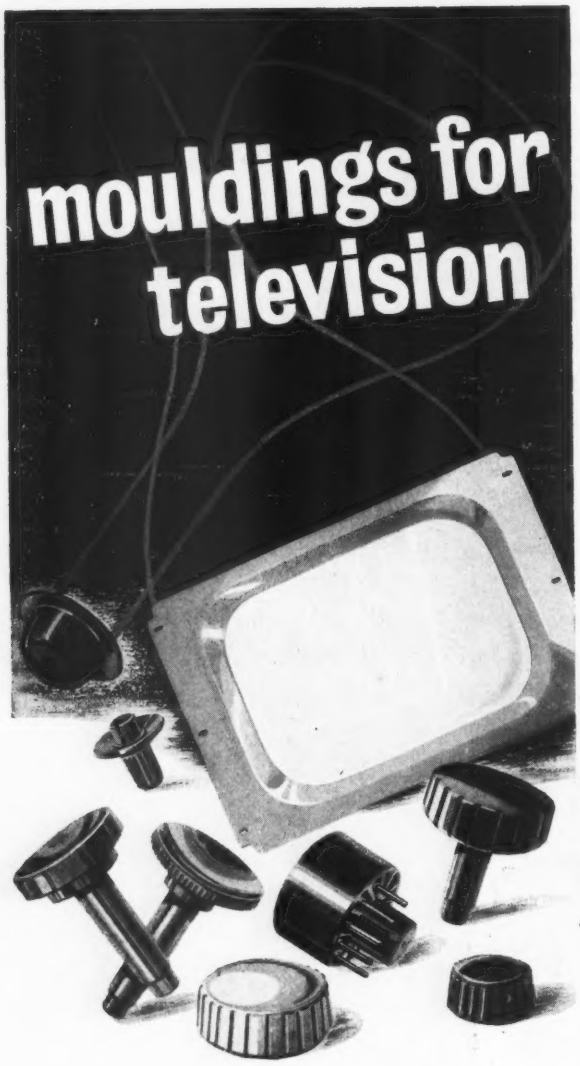

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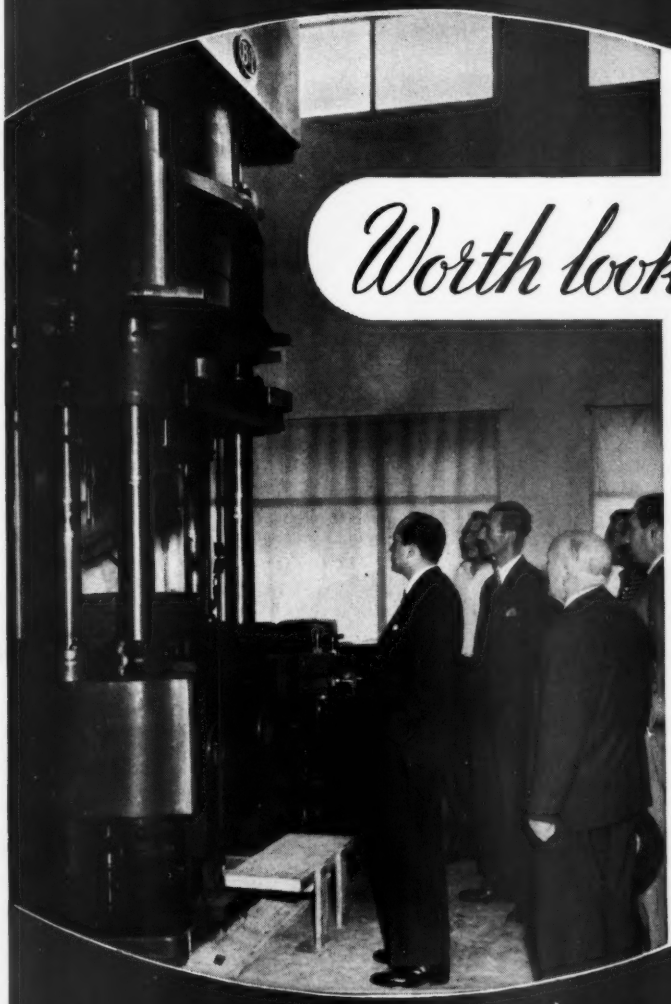

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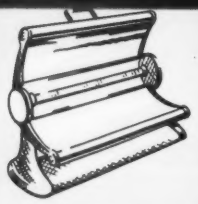
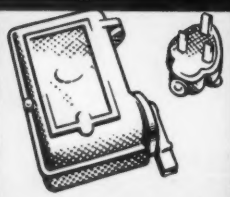


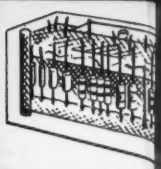
HEAT RESISTANCE

Laminated Sheet Rod and Tube

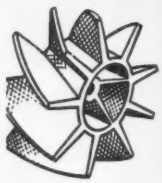


ELECTRICAL INSULATION

Shell Moulding and Core Binding Resins

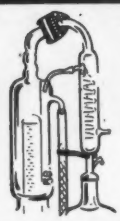


TROPICAL RESIST



ATER RESISTANCE

Paper and Fabric Based Laminates



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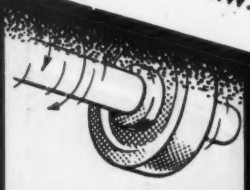

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Plastics

VOL. XIX. No. 202 MAY, 1954

EDITORIALS

Exports and the B.I.F.

WE know that in prehistoric times this country sent tin to the civilized world—the Mediterranean world, but the Phœnicians were the carriers and the instigators of this trade. In Roman times it was the Roman fleets that sailed from the port of Ostia and to points as far north as the Baltic for amber, as far east as Ceylon for spices and precious stones and to more distant countries for glass and silks. And when Rome declined it was Venice that took over the trade to the Black Sea, to India, to China, to Spain and England—the Venetian fleets bringing us spices and silk and wine sailed home again for the last time in the late 16th century, taking with them tin and wool. Nor must we forget that from the 13th century onwards, much internal and external trade was carried out by vastly spread organizations such as the Hanseatic League with its "headquarters" at Lubeck, Hamburg and Rostock and agents in all the big towns from Cadiz to Colombo.

It does not need much insight to realize that our very geographical position off the north-west corner of Europe meant that until we became a maritime nation supplied with a navy and merchant ships to carry our own and other countries' merchandise, we could not become a merchanting nation of any importance. It was thus with eyes towards the West and not towards the East that we sought trading freedom, and the freedom of the western seas in Elizabethan times gave us the trade in both the North and South Americas. So far as the American Colonies were concerned in the 17th and 18th centuries there was the strange situation that while we had no desire to control the lives or habits or religion of the colonists and as Adam Smith said, "In everything except their foreign trade, the liberty of the English Colonists to manage their own affairs in their own way is complete," yet the system was a vast monopoly which forbade the Colonists themselves to manufacture and trade. This evil lost us the colonies, but so rapid was progress in America that in spite of bitterness our trade with it increased rather than diminished. America needed English goods and bought them, for we made the goods and could transport them.

And so it was after the Napoleonic wars from which we emerged without a rival, still rich in shipping and growing in industrial strength. Internally, the inventions of Watt, Stevenson, Crompton, Arkwright and others that impelled the Industrial Revolution, the increasing use of coal and inventions in iron production, the creation of a new road system from 1800 onwards by Macadam, Telford and Blind Jack of Knaresborough and the opening of the Stockton and Darlington Railway in 1825, the complete system of internal free trade as opposed to Continental systems of internal customs and excise duties, all helped to get the manufactured goods efficiently to the nearest ports.

There was more to our growth than this, for as the Marshalls in their "Rise of Modern Industry" state, even before the great inventions began, England had a Government favourable to commerce, had textile and iron industries, a banking system and joint stock companies. . . . All classes put industrial expansion high among the objects of public policy . . . the disciples of Sir Isaac Newton turned to industry. And as Burke stated, "The East India Company began in commerce and ended in Empire." We were nearing the heyday of commercial success of the Victorian era.

The Plastics Industry Exports

AND so to the plastics industry itself, which the world considers so new and indeed is so if we consider the modern, purely synthetic phase of it. But its roots in England are more than 100 years old, for it was in 1850 that the first telegraph cable across the Channel was made on an extrusion machine invented by Henry Bewley in the 1840s, using gutta-percha, a natural representative of the great molecule family, as plastic as most modern ones. The work was carried out by the Gutta-Percha Co., the progenitor of the Telegraph Construction and Maintenance Co., Ltd., which has thus been extruding plastics for over 100 years. This country was therefore well prepared to deal with the newer plastic celluloid when it appeared in the 1870s and with those that followed in the first quarter of the 20th century: casein, cellulose acetate and synthetic phenolics and ureas. Exports to the Colonies, Dominions and many other countries overseas in the form not only of combs, buttons, fancy goods and toys, but also the early electrical components in phenolics, grew steadily.

The second quarter of the 20th century saw the greatest advances in the important industrial countries, or rather the chemical and engineering industries foresaw the importance of plastics and were pressing forward with new researches, in pure science, in the construction of new presses, injection and extrusion machines, which processed the new thermosetting and thermoplastic resins at a speed which foreshadowed new horizons for the industry.

Thus we arrive at the beginning of the second half of the century, when Great Britain in one of the most praiseworthy and anxiously awaited industrial endeavours in her history, has, to the astonishment of the world, created a true petrochemical industry that the petroleum world of 1930 considered "impossible economically and altogether ill-advised for a country without 'indigenous' petroleum." This statement now appears foolish in the light of modern events when even the U.S.A. must search for petroleum in far-off places. Our refineries and cracking plants grow apace and today our p.v.c., polystyrene, polythene, nylon, Terylene, polymethyl methacrylate, and other plastic raw material plants are the stronger and the more flexible because of them. We are also now busily occupied in creating three new synthetic rubber factories.

As the export figures on another page show, 1953 was an improvement on 1952 and the opening of 1954 gives hope for still further advances. They refer in the main to raw materials and machines, but as the reports from many moulding companies show, direct export of moulded units is far from being the rarity many imagine, and we may put this down to specialized goods, to good workmanship, good design, or to efficient low-cost production.

The tale we unfold is not complete, for no figures can segregate the great number of components that form part of

larger exported structures, be they aircraft, motorcars, transformers and motors, vacuum cleaners, washing machines, and so on. These are truly invisible exports as are the patents, licences to manufacture and sale of technology and "Know-how."

The Future of Exports

WE have already referred to the encouragement that successive Governments have given to exporters in this country—it is available today in an even more intensive form as we show elsewhere in this issue. It has always, rightly in our opinion, been limited to an advisory form and while many are critical of this help in the face of severe competition or apparently unsurmountable tariff walls, the introduction of subsidies is a system fraught with dangers and evils and inevitable international friction. The recent attempts by the Federation of British Industries fostered by the Government to reach international agreement on the abolition of export incentive schemes is a case where authority does actively try and force an issue to help the exporter. The attempt may fail for Germany with its particularly objectionable tax rebate scheme for German exporters appears inflexible at a time when in all other respects the British exporter is his equal in all respects, in quality, price and delivery. If no new international agreement is made Italy is reported to have prepared its own scheme of incentives.

More hopeful signs of opening trade conditions come from the U.S.A., where President Eisenhower's request to Congress to approve the recommendations of the Randall Commission by making important tariff cuts comes as a breath of fresh air into the European scene.

MOULDING POWDER AND SHOT

If I had been advised by the Editor, which I was not, that this was to be a special export number, I would have given freely of my recognized ability in this field. I must also warn my faithful readers that the article on another page in this issue by a soi-disant expert in the export field who bears unfortunately the same ancient and otherwise worthy surname as my own, has been published without my wishes. I have no doubt that the information given is inaccurate, suspect and devoid of basic knowledge born of experience and wisdom—in fact, to use your modern jargon, it is as phony as the author himself. I will therefore content myself with giving you a few excerpts from my bedside book "The Fugger New Letters." As you know the Fugger family were the merchant princes and bankers of Augsburg who started business in 1350 and possessed their agents and correspondents in most parts of the known world.

It Isn't Fair!

◆ ◆ ◆

From Lisbon, the 30th day of July, 1582. In Lisbon there has arrived a ship from India of the name "Buen Jesus." She brings five thousand five hundred quintals of pepper, two thousand of cloves, much cinnamon and other spices. She started upon the 23rd day of January and lay thirteen days off the island of St. Helena. From thence she sailed on the 11th day. In India two more ships lay at the loading station, they are said to be bringing about sixteen thousand quintals of pepper, six thousand quintals of cloves and other spices. May God grant them safe arrival.

How Some Made Money

◆ ◆ ◆

From Venice, the 1st day of November, 1589. Your Grace will no doubt have learnt from the weekly reports, of one Marco Antonio Bragadini the famous alchemist. He is reported to be able to turn base metal into gold. He is forty years old and was formerly possessed of no mean fortune, but spent it in riotous living. Then he was mint-master to the Grand Duke Francis. From thence he came to the late Pope Gregory, who held him in great esteem. He thus obtained several thousand ducats.... He has expounded his craft to several persons.... The man is now in this city, holds banquets daily for five hundred people and lives in princely style. . . . He literally throws gold about in shovelfuls. This is his recipe: He takes ten ounces of quicksilver, puts it into the fire and mixes it with a drop of liquid which he carries in an ampulla. Thus it promptly turns into good gold. He has no other wish but to be of good use to his country, the Republic. . . . This is truly marvellous and quite novel to all of us. The alchemists have taken heart of grace again and are working day and night. One hears of nothing but of this excellent man who, as already stated, has no other wish but to serve his country.

How Others Made It

From Prague, the 13th day of October, 1600. About 4 o'clock in the afternoon yesterday, the Persian Embassy arrived here. They were met as far as the Royal Pavilion by three hundred horsemen and two captains of the town, namely Herr Popel and the Lord Chancellor. The Ambassador was thus received in fine fashion. The Embassy has now been on its journey for a year and a half during which time 16 members of it have died. The head of the Embassy is an Englishman and he is short and dressed in English fashion. Whereas so many of the Ambassador's Persian servants died during the journey he has taken Englishmen into his service.

Tough Guys the English

◆ ◆ ◆

I think the Editor of *Plastics* has slipped up with this issue by forgetting to mention the value of trade and technical journals in export matters: excessive modesty no doubt. In fact, they must be regarded as being the best primary agents in the game, for if the staff are acutely aware of the movements of industry, technically able to assess the value of new raw materials, new machines, new processes and new finished goods and are able to present this knowledge in an adequate and well-illustrated form, the journal provides the overseas reader, technical or not, with a continuous and rapid means of information obtainable by no other method so simply. In the case of this journal, the original policy was carefully designed so that, apart from its purely technological aspect, a portion should act as unofficial import and export agent to the industry, presenting a two-way flow of information from this country and to this country from foreign sources. Among the regular sections in this journal I consider of exceptional value in this regard are "Plastics in the Service of Man," "The World Industry Uses Plastics," "Machines for the Industry" and, finally, "Letters to the Editor," which, while dealing with the readers' technical problems generally, has developed a straightforward "demands for semi-finished and finished goods" flavour from home and overseas buyers and agents. It may interest and surprise our readers to learn that, like any other business, this organization has its own export department, for *Plastics* is sent regularly to subscribers in more than 50 different countries: to every country in Western Europe, to all the Americas, to Africa and Australasia, to the Near and Far Easts. Many copies are regularly sent also to Soviet Russia, Czechoslovakia and to the Chinese Republic. Since each copy is read by any number of individuals in an organization, from one to "n," where "n" may be large, it can be said that the story of the British plastics industry is told far and wide.

Journals and Export

DOGSBODDY.

SPECIAL EXPORT AND B.I.F. NUMBER

The occasion of the British Industries Fair gives us the opportunity of publishing as a preface to the descriptions of the stands in London and Birmingham, a summary of the condition of our industry for consideration by our readers, agents, importers and technicians in factories overseas, in the hope that they will recognize the advantages to their own countries in fostering still further the use of plastics everywhere. No less do we hope that those manufacturers at home who have not hitherto ventured into the field of exports will find these pages useful in spreading the gospel of peaceful and profitable trade between nations.

We offer our special thanks to the President of the Board of Trade, the Rt. Hon. Peter Thorneycroft, M.P., for his heartening introductory message.

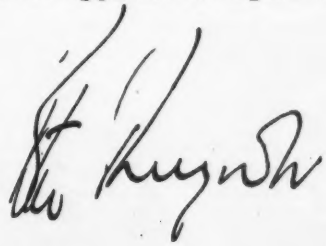
From the President

BOARD OF TRADE,
HORSE GUARDS AVENUE,
WHITEHALL, S.W.1.

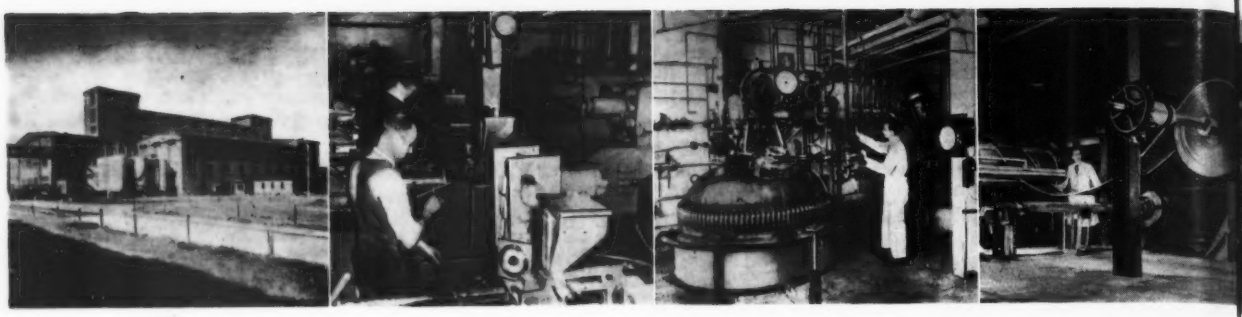
I am pleased to have a chance to write an introductory note to this special number of "Plastics" because it serves the double purpose of focussing our attention on the achievements and importance of the plastics industry, and of stimulating the industry to renewed efforts. Our daily life, indeed, is full of examples of our dependence on plastics, domestically and industrially; and we know that the industry is always trying to improve still further the quality of its products, and to develop new materials capable of an even wider range of functions.

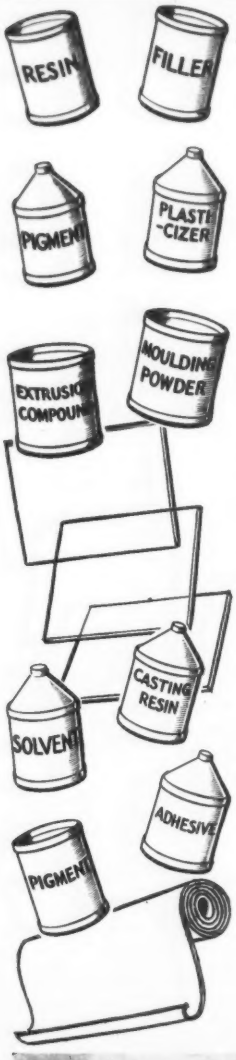
We are perhaps most concerned at the moment with the contribution of plastics to our exports, and with future developments in our export markets. In 1953 plastics exports earned us £16,000,000 and while they were slightly below 1951 exports in value, they were slightly above them in volume. This emphasises how well our industry has responded to overseas demands for its products and how earnestly it has met increasing competition.

The standard set for the industry is a high one, and, praiseworthy as the work of the last year has been, there is no room for complacency. Fortunately, this is a vigorous industry, conscious of its increasing importance and determined to meet the demands made on it by an era of enormous technical advances. I am sure that the energy and intelligence which produced the successes of 1953 will be applied in equal measure to the tasks of 1954.



14th April, 1954.





What Our Plastics Industry Offe

RAW MATERIALS

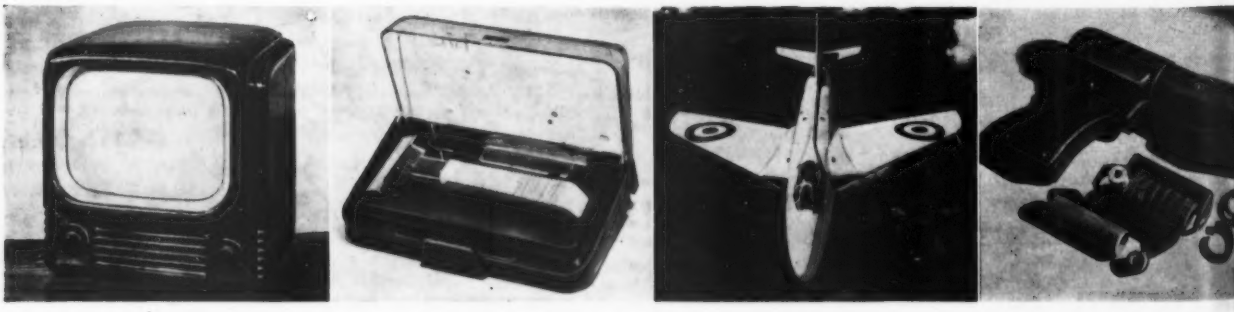
PRODUCTS	APPLICATIONS
1. **SYNTHETIC RESINS, ETC.** *Powder form, lumps, chips, flakes.* Phenol-formaldehyde, urea-formaldehyde, melamine-formaldehyde, cellulose acetate, polystyrene, polyvinyl chloride, polymethyl methacrylate, nylon, polytetrafluorethylene. Additives: Fillers, plasticizers, pigments, catalysts, stabilizers, etc.	Manufacture of moulding powde extrusion compounds, sheet, fil etc.
2. **SYNTHETIC RESINS, ETC.** *Solid and liquid forms.* As in 1. Also poly-esters, epoxy resins, silicones, polyvinyl acetate. Additives: Monomers, catalysts, solvents, emulsifying agents, etc.	Production of coating compoun adhesives, bonding and impreg tion solutions, emulsions.

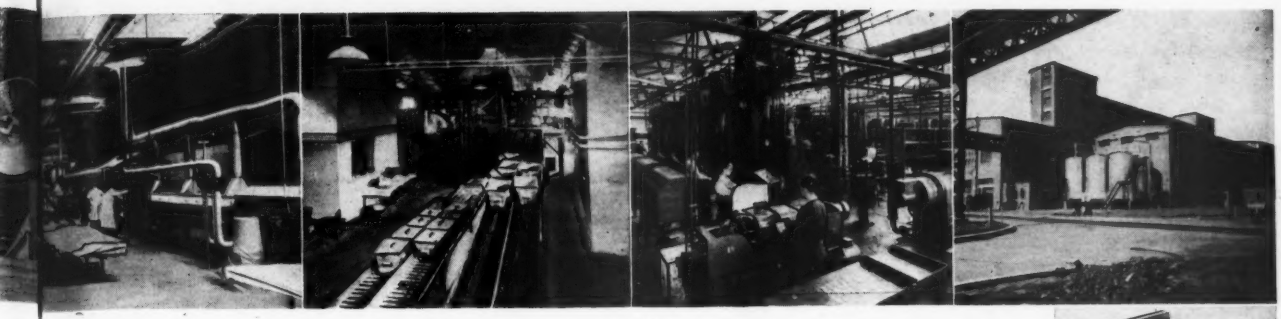
PROCESSING COMPOUNDS

1. **MOULDING POWDERS,** with and without fillers: Phenolic, urea and melamine compounds, polystyrene, p.v.c., nylon, cellulose acetate.	Compression and injection mouldi
2. **EXTRUSION COMPOUNDS:** P.v.c. (for rigid and flexible products), polythene, nylon, polystyrene, phenolics.	Manufacture of covered wire, tu solid profiles, film.
3. **CASTING RESINS:** Phenolics, polyesters, epoxy resins, polymethyl methacrylate, polystyrene.	Production of engineering tools, search castings, embedding electr components and other specimens
4. **COATING COMPOSITIONS, ADHESIVES AND IMPREGNATING COMPOUNDS:** Phenolic, urea, melamine, polyester and epoxy resins, polyvinyl acetate, p.v.c., casein, cashew-nut resin composition.	Wood and metal bonding, paper fabric lamination, foundry s binders, glass fibre and asbes laminates.
5. **DIPPING AND SPRAYING COMPOUNDS** (gels, latexes, powders, etc.): P.v.c., nylon, polythene.	Metal and wood coverings, flexi couplings, plastic-coated gloves, seals, etc.
6. **FLEXIBLE MOULD-MAKING COMPOUND:** P.v.c.	Moulds for casting plaster, synth resins, etc.

SEMI-FINISHED PRODUCTS

1. **LAMINATED SHEET AND BLOCK** (thermoset): Phenolic-bonded paper, fabric and veneers; melamine-surfaced phenolic-bonded paper, glass fibre and asbestos bonded with polyesters, phenolics, epoxy resins, etc.	Machining of electrical and techni sheeting, technical compone decorative and structural panels buildings and ships, shaping aircraft components and structu tanks, etc.





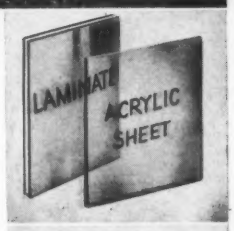
tr)ffers Overseas Importers

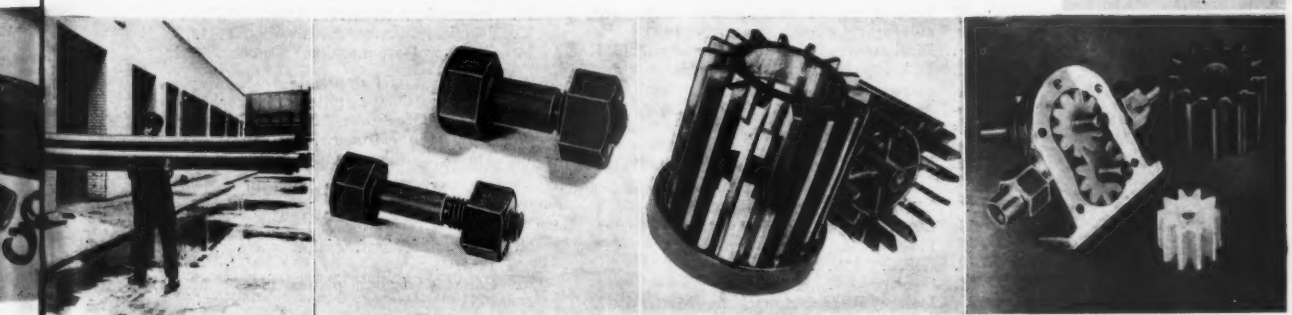
SEMI-FINISHED PRODUCTS—Continued

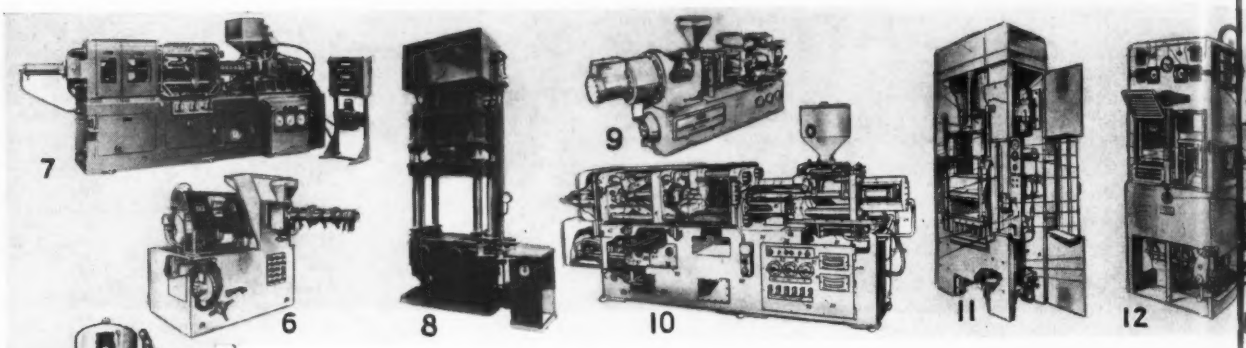
PRODUCTS	APPLICATIONS
THERMOPLASTIC SHEET (rigid, transparent and opaque): Acrylics, p.v.c., polythene, cellulose acetate, cellulose nitrate.	For low-pressure fabrication, vacuum forming, blowing, welding.
THERMOPLASTIC SHEET (flexible): P.v.c, cellulose acetate.	Production of rainwear, furniture covering, bags, packaging, etc.
THERMOPLASTIC FILM: P.v.c., polythene, nylon, cellulose acetate, polyethylene terephthalate (Terylene).	Packaging, spiral tube winding, electrical coverings, box-making, curtains, etc.
CASTINGS: Phenolics, acrylics.	Handles, decorative objects, engineering tools.

FINISHED PRODUCTS

MOULDINGS (thermoset): Phenolics, ureas, melamine.	Electrical, general technical, engineering, fancy goods, toys, household goods.
MOULDINGS (thermoplastic): Polystyrene, polythene, nylon, p.v.c., cellulose acetate and acetate butyrate, p.t.f.e.	Electrical, technical, fancy goods, toys, refrigerator components, bottles, etc.
EXTRUDED PROFILES (rigid and flexible): Phenolics, p.v.c., nylon, acetate, acetate-butyrate, polystyrene, polythene.	Piping and tubing, rollers, films, beading, cables, channelling, etc.
FABRICATIONS FROM SHEET, ROD AND BLOCK:	
(*a*) Rigid, thermoset. Forming, moulding, machining: phenolic and polyester mouldings.	Electrical board, heavy engineering machinings, boats, aircraft components, etc.
(*b*) Rigid thermoplastic, by low-pressure moulding, machining, welding: acrylic, cellulose nitrate, acetate, casein, p.v.c., polythene, nylon.	Technical and chemical plant, gears, advertising, household equipment, fancy goods.
(*c*) Flexible thermoplastic by welding, etc.: P.v.c., polythene.	Clothing, bags.
(*d*) Flexible thermoplastics, fabric-coated: P.v.c.	Conveyor belting, bags.
FABRICATIONS FROM FILM: P.v.c., cellulose acetate, polythene, nylon.	Packaging, reeled strip, recording tape, toys.
DIPPED GOODS from gels, emulsions, etc.: P.v.c.	Gloves, tool handles, coated wire, etc.







Plastics Working Machines

SINCE the beginning of the Industrial Revolution the British engineering industry has built machines for many purposes for use in all parts of the world. It is not surprising, therefore, that with the growing plastics moulding and fabricating industry there has developed during the last 50 years a branch of engineering to provide a great variety of equipment used by manufacturers of plastics products. The closely knit engineering industry has been quick to absorb the experiences and ideas of moulders and fabricators and to take advantage of techniques developed in the laboratory for using new materials and new processing methods.

Compression Moulding Machines

Hydraulic presses are ideally suited for the production of compression mouldings. In recent years great improvements have been made mainly in methods of controlling pressure, of regulating the times of moulding cycles, and in eliminating the risk of faulty production by accurate control instruments. Such presses are available both in self-contained types fitted with their own hydraulic pumping units or line-fed types where one pump operates a number of units. Examples of improvements in efficiency include the dual-type press (12) where loading and unloading time is saved by the use of two sets of platens alternately open and closed, and a fully-automatic press (2) with control time fitted in addition to completely automatic time cycling.

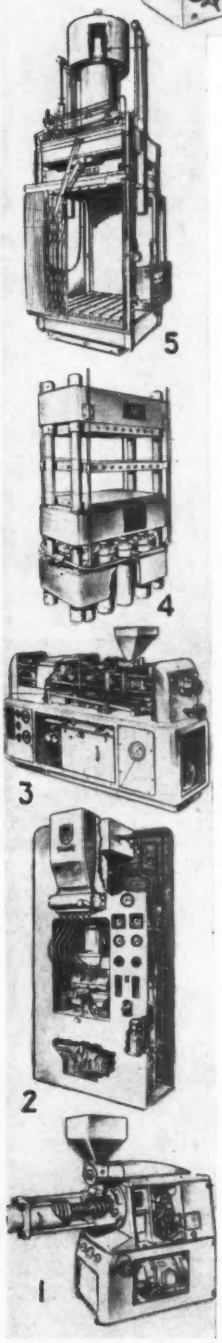
Pelleting and Preheating

In order to improve the cure of thermosetting mouldings as well as to reduce handling times, moulders prefer to use materials in the form of compressed bricks or pellets and a number of presses using different systems have been developed specifically for this purpose (13, 23, 25). Further shortening of cure time is possible by preheating either the powder or the pellets and various units including radio-frequency heaters are produced for this purpose (18).

Injection Moulding Machines

Although no commercial injection moulding machines were produced in Britain before the last war there are now about eight different makes on the market ranging from small, hand-operated bench machines of about ½-oz. capacity to large units of over 32-oz. shot capacity.

As with compression moulding presses the endeavour has been to increase not only the capacity obtainable from each moulding cycle but also the frequency of cycles. Machines today need to handle a great variety of plastics



Examples of what British producers of plastics working machinery are currently producing have been recorded in recent years in *Plastics* in the series "Machines for the Industry." Some of the machines described in this way are illustrated on these pages and a guide to the series showing the date of publication of each description, appears below.

Compression Moulding Presses

2. Lancastrian 50-ton automatic press. August, 1952.
4. Hodson multi-ram press. July, 1953.
5. Daniels 100-ton low-pressure press. April, 1953.
8. Bradley and Turton 350-ton press with automatic control. December, 1950.
11. Bipel automatic control press. April, 1951.
12. Jackson Heywood Twin-o-Matic press. July, 1952.
14. Turner 50-ton press. April, 1952.
15. Daniels 125-ton press with process timer. January, 1951.
16. Finney dual transfer press. March, 1951.

Pelleting and Preheating Machines

13. Daniels 125-ton preform press. August, 1951.
18. G.E.C. 2-kW. preheater.
23. Bipel pelleter. June, 1952.
25. Manesty RS2 tablet machine. March, 1952.

Injection Moulding Machines

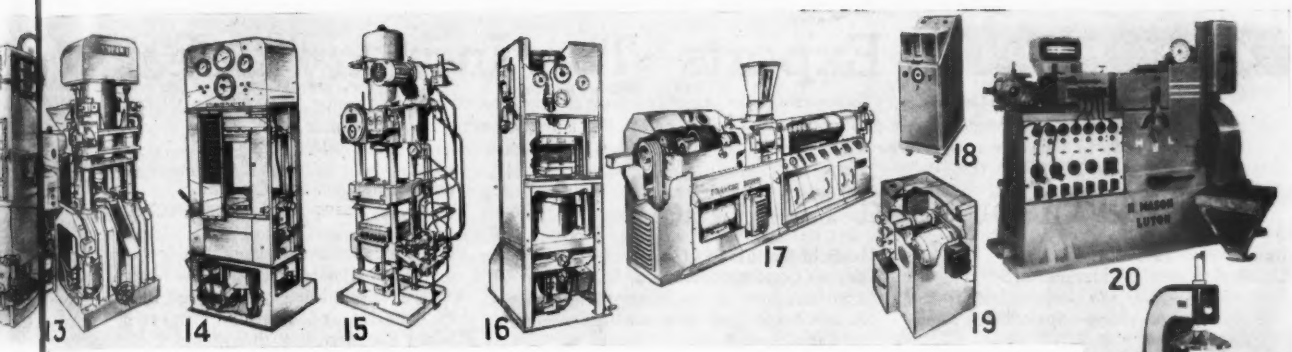
3. Dowding automatic fast-cycling machine. June, 1953.
7.—Windsor 32-oz. pre-plasticizing Autoplas.
9. E.M.B. No.9 4-oz. machine. November, 1951.
10. Peco 4/6-oz. machine. March, 1951.
22. Hupfield 2-oz. machine. May, 1951.
24. Plasticor ¾-oz. machine. October, 1952.

Extruders

1. Windsor RC200 extruder. October, 1951.
6. Reed RB2 extruder. June, 1952.
17. Shaw 4½-in. extruder. July, 1951.
20. Mason 1½-in. extruder.

Miscellaneous Equipment.

19. Hupfield granulating machine. December, 1952.
21. Radyne 3-kW. r.f. welding machine. March, 1954.
26. Edwards vacuum plating plant. March, 1953.



—British Production

with different thermal, viscosity and moulding characteristics and great care is taken in the design of heating cylinders to ensure maximum versatility in handling different grades of injection moulding materials. At least four manufacturers are currently producing fully automatic machines with controlled material feed and cycle times.

Extruders

Interest in the extrusion of thermoplastic materials has increased enormously in recent years and to meet the demand a variety of extruders specially designed to handle plastics materials are being produced. Some of the companies making these machines have been producing rubber machinery for many years and have adapted their equipment to the more stringent requirements of plastics working, whilst other manufacturers have designed entirely new extruders suitable for plastics.

Calenders, Mills, etc.

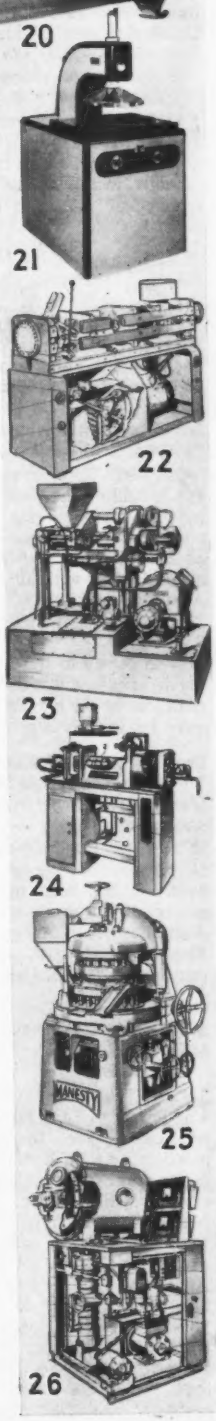
The processing of polyvinyl chloride into sheet material has adopted many of the techniques originally developed for rubber, but here again a variety of mills, calenders and ancillary equipment has been specially designed to work to the close temperature limits and dimensional tolerances essential to the production of high-quality p.v.c. products.

Welding Machines

To fabricate p.v.c. sheet radio-frequency welding techniques have been found most efficient and most economical. Electronic presses to meet these requirements are produced from ½ kW. to 5 or 6 kW. power.

Miscellaneous Equipment

In addition to the machines described above, produced primarily for the plastics industry, the British engineering industry also produced a great variety of machines applicable to plastics as well as to other industries. Amongst those with which plastics manufacturers are most concerned are mixing and granulating equipment (19) and the vacuum coating equipment capable of giving metallic finishes to plastics products (26).



The following list gives names and addresses of principal British manufacturers of plastics moulding presses, extruders and other plastics working machines. Their products are indicated by the following letters: C—compression; T—transfer moulding presses; L—laminating presses; I—injection-moulding machines; E—extruders; P—preforming and pelleting machines; H—preheating equipment; W—plastics sheet welding equipment; D—calendering equipment; M—mills, grinders and mixing machines; V—miscellaneous.

B.I.P. Engineering, Ltd., Streetly, Staffs. **C, P.**

Bradley and Turton, Ltd., Caldwell Works, Kidderminster. **C, T.**

Bridge, David and Co., Ltd., Rochdale, Lancs. **E, D, M, V.**

Cohen, George, Sons and Co., Ltd., Wood Lane, London, W.12. **C, V.**

Daniels, T. H. and J., Ltd., Stroud, Gloucester. **C, T, L, I, P.**

Davidsons Engineers (M/C), Ltd., Garratt Street, Manchester, 10. **I.**

Dixon, T. H. and Co., Ltd., Letchworth, Herts. **C, M, V.**

Dowding and Doll, Ltd., Kensington, London, W.14. **I.**

E.M.B. Co., Ltd., West Bromwich, Staffs. **I.**

Edwards, W. and Co. (London), Ltd., Crawley, Sussex. **V.**

Finney Presses, Ltd., Berkeley Street, Birmingham, 1. **C, T.**

Foster, Yates and Thom, Ltd., Blackburn, Lancs. **C, L, M, V.**

General Electric Co., Ltd., Kingsway, London, W.C.2. **H.**

Herbert, Alfred, Ltd., Red Lane Works, Coventry. **C, I, V.**

Hodson and Co. (Machinery), Ltd., Nottington, nr. Bury, Lancs. **C, T, L.**

Hupfield Brothers, Ltd., Stanmore, Middlesex. **I, M.**

Iddon Brothers, Ltd., Leyland, Lancs. **E.**

Manesty Machines, Ltd., Speke, Liverpool. **P.**

Mason, N., Luton, Beds. **E.**

Metropolitan-Vickers Electrical Co., Ltd., Trafford Park, Manchester, 17. **H.**

Miller, P. and L., Ltd., London, E.1. **M.**

Projectile and Engineering Co., Ltd., Battersea, London, S.W.8. **I, E.**

Radio Heaters, Ltd., Wokingham, Berks. **H, W.**

Redifon, Ltd., Wandsworth, London, S.W.18. **M, W.**

Reed Brothers (Engineering), Ltd., Millwall, London, E.14. **E.**

Robinson, Joseph, and Co., Ltd., Greengate, Salford, 3. **C, M.**

Shaw, Francis and Co., Ltd., Aston New Road, Manchester, 11. **E, D, M.**

Shaw, John, and Sons (Salford), Ltd., Salford 3, Manchester. **C, L.**

Turner Manufacturing Co., Ltd., Villiers Street, Wolverhampton. **C.**

Vacuum Industrial Applications. Ltd., Wishaw, Lanarkshire. **V.**

Wickman, Ltd., Tile Hill, Coventry. **I, V.**

Windsor, R. H., Ltd., South Chessington, Surrey. **E, I.**

EXPORT SECTION

Exports—The Industry Speaks

This part of the Export Section consists entirely of comments on the export situation by a number of companies in the plastics industry. At our request, they have summarised their experiences and these pages throw a valuable light on the industry's position in the overall export field.

Machinery and Equipment

Bradley and Turton, Ltd.
Caldwall Works, Kidderminster.
Hydraulic presses for compression and transfer moulding—upstroking down-stroking and side ram types.

DURING the five years from 1949 to 1953 we have exported a variety of presses ranging from 10 tons capacity to 1,000 tons capacity, to countries all over the world. The number of machines and their value are given for each of these years below:—

Year	No. of machines	Value
1949 ...	13 ...	£9,412
1950 ...	26 ...	£21,969
1951 ...	21 ...	£18,205
1952 ...	12 ...	£19,293
1953 ...	32 ...	£27,735

T. H. and J. Daniels, Ltd.
Lightpill Iron Works, Stroud, Glos.
Manufacturers of hydraulic presses and plastics moulding plant.

A VARIETY of compression and injection moulding machines have been exported by this company. In 1953, for instance, 22 compression machines as well as a number of injection and preforming machines were dispatched to various destinations including Australia, South Africa, India, Canada, U.S.A., Portugal, France, Colombia, and Sweden.

With regard to trends, there is an increasing demand and it is difficult to give accurate estimates of the market for plant and equipment for the whole of this year.

Dowding and Doll, Ltd.
346 Kensington High Street, London, W.14.
Manufacturers of injection - moulding machines.

THE Dowding fully automatic fast-cycling machine is our principal export product. It has been sold to destinations in nearly all European countries as well as to Australia, South Africa and also to U.S.A. The Lester ½/4 oz. machine is exported principally to European countries.

General Electric Co., Ltd.
Magnet House, Kingsway, London, W.C.2.
Manufacturers of electrical equipment, trade moulders.

IN the field of equipment for the plastics industry G.E.C. produce high-frequency pre-heaters for thermosetting moulding powders and infra-red equipment used for many purposes including the pre-heating of thermoplastic sheets prior to shaping. Numbers of each of these machines have been exported; for example, the pre-heating ovens have gone to Italy and to South Africa and the thermoplastic softening plant has been supplied to India, Hong Kong, South Africa and Spain.

Infra-red reflectors for various purposes have been exported to most countries, and these units are often assembled by the customer into small plant.

Hupfield Brothers Ltd.
Dalston Gardens, Stanmore, Middlesex.
Manufacturers of injection moulding machines and granulating machines, tools, moulds, etc.

INJECTION moulding machines: over 70 machines of 1 and 2 oz. capacity have been exported to a total value of £50,000. The territories reached include, Australia, Belgium, Belgian Congo, Brazil, Burma, Canada, Denmark, Eire, Egypt, Finland, Hong Kong, India, Israel, New Zealand, S. Rhodesia, Sweden, Switzerland, Uruguay.

Granulating machines: nearly 40 machines of a total value of approximately £5,000 have been exported to territories, Australia, Canada, Egypt, Finland, India, New Zealand.

Manesty Machines, Ltd.
Evans Road, Speke, Liverpool.
Chemical and pharmaceutical machinery.

AS our pelleting machines may be used also outside the plastics industry we do not always know the end product for which our machines are used, but we can advise that we supply quite a number of our pelleting machines abroad and a certain percentage would be used for preforming plastics. Our cone mill is also used in the plastics industry for breaking down rejected preforms and hard flash.

The territories we export to are world-wide, but we do know that our pelleting presses for plastics have gone to Australia, Brazil, Canada, Colombia, Denmark, Finland, India, Israel, New Zealand, Norway and Sweden.

N. Mason.
28b Guildford Street, Luton, Beds.
Manufacturers of plastics extruders and take-off equipment.

OUR experience in the export market is that a third of our total production is sold abroad. During 1954, however, we have sold exactly half of our output overseas and it now appears that the proportion is likely to be higher in 1955 judging by our present orders and inquiries on hand.

Projectile and Engineering Co., Ltd.
Acre Street, Battersea, London, S.W.8.
Plastics injection moulding equipment and extrusion machines.

THE company has recently set up a sales organization Peco Machinery Sales (Westminster), Ltd. (A news item about the company appears on page 171.)

Approximately two-thirds of Peco machines are exported to territories including Australia, Japan, Canada, Brazil, Argentina, Mexico, Indonesia and Bolivia. The types include injection moulding machines from 2 to 32 oz. capacities and extruders of 2½-in. screw diameter.

Joseph Robinson and Co., Ltd.
Springfield Lane Iron Works, Greengate Salford, 3.
Automatic compression moulding presses, mixing mills and rubber machinery.

WE have recently taken over the sole manufacturing and distributing rights in the United Kingdom and throughout the world for the Twin-O-Matic and Triple Twin-O-Matic presses as a result of an agreement concluded between Jackson, Heywood and Co., Ltd., and ourselves. It is our sincere hope that the results of our endeavours at the B.I.F. where we are exhibiting, will enable us to further our exports.

In addition we are exporters of all classes of large and small mixing mills for both plastics and rubber in sizes ranging from 8 in. diameter by 18 in. wide on face, to 26 in. diameter by 84 in. wide on face, with variable speed drives. These have been exported to the Argentine and South Africa.

Francis Shaw and Co., Ltd.,
Corbett Street, Ashton New Road, Manchester, 11.
Machinery and equipment for compounding, calendering and extruding plastics.

WE have recently formed a subsidiary company in Canada with a small plant at Burlington, Ontario, which, to begin with, will act as a service depot for the equipment we are at present exporting to that country. This also enables us to follow up inquiries received from the American Continent as well as offering technical advice and service.

We make a large range of machinery for the rubber and plastics industries, and have exported this equipment to most countries of the world where such plant is used. At the present time, between 60 and 70% of the order book is for the export market, which, at the present time covers, France, Holland, Denmark, Sweden, Germany, Yugoslavia, Italy, Turkey, Israel, India, Australia, New Zealand, South Africa, Brazil, Venezuela, Canada.

We have a number of plastic extruders on our order book with screws of 8-in. diameter, which are believed to be the biggest machines of their type to be built in this country. The first of these will be on test towards the end of April.

The Tintometer, Ltd.
Waterloo Road, Salisbury.
Colour measuring instruments.

OUR products come under ancillary plant and equipment. We manufacture colour measuring apparatus incorporating the universally used Lovibond scale of colour units. This apparatus is very largely used in the plastics industry for checking uniformity of colour in finished products, standardizing raw materials, etc.

We have agents in nearly every country in the world and, as you mentioned in your last issue, the writer is visiting North America shortly in order to assist our representatives there at various conferences.

Plastics Materials

EXPORT SECTION

Arlington Plastics Development, Ltd.
Arlinghide Works, Barretts Grove, London, N.16.
Manufacturers of leathercloth.

OUR products Arlinghide p.v.c.-coated fabrics for the furniture, bag, footwear and protective clothing industry come under the classification of semi-finished goods. We do a substantial business overseas where we sell about one-third of our total production, mainly to the furniture trade.

B.X. Plastics Ltd.
Highams Station Avenue, Chingford, London, E.4.
Thermoplastic moulding powders, sheets, films and fibres.

THE Company is the only producer of celluloid sheets in the British Commonwealth and Empire and maintains large sales there, as well as exporting to other markets. Cellulose acetate sheets also find outlets in most countries particularly where the non-inflammable properties of this material make it preferable to nitrocellulose.

There is a substantial export of cellulose acetate moulding powders.

Flexible p.v.c. sheeting has found steady export sales both in the form of polished sheet and embossed rolls. Stiffening competition from other producing countries is being met successfully.

Cobex, the rigid vinyl sheeting produced by the Company is used by fabricators all over the world and although this product has not been on the market for a very long time the demand that has been created has been surprisingly large.

Other products of the Company which include Polystyrene, Casein, Polythene, Layflat Tubing and Vinyl Monofilaments also find their way on to the export market.

Bakelite Ltd.
12-18 Grosvenor Gardens, London, S.W.1.
Manufacturers of phenolic and urea resins and moulding powders, laminates, p.v.c. resins and compounds.

WE cannot give much helpful information about our exports. There is, however, still a very large overseas market for good quality p.v.c. both plasticized and unplasticized.

Phenolic moulding powder is subject to severe competition from German manufacturers, especially in Europe.

Laminated sheet is in competition with both German and Swedish producers, based on cheap Swedish kraft paper, but decorative laminated sheet has still considerable prospects overseas.

Birkbys Ltd.
Liversedge, Yorkshire.
Mouldings, moulding materials, resins, cements, varnishes.

WHILST an appreciable number of our mouldings are exported, they do not find their way overseas as mouldings, but as integral parts of complete apparatus, i.e., all types of electrical machinery, instruments and many kinds of mechanical equipment. It is impossible to obtain definite information but we have reason to believe that our mouldings, as components in complete equipment find their way to a very large proportion of the countries of the world.

Commercial Plastics, Ltd.
1 Avery Row, Grosvenor Street, London, W.1.
P.v.c. sheet and polythene lay-flat tubing.

SEVERAL special lines have been added to our range during the past few months, of outstanding importance being our printed p.v.c. film Fablon for the raincoat trade, which has proved a best seller. We also specialize in the making of multitone heavy unsupported sheeting for the handbag trade as well as printed heavy sheeting in a large variety of designs for the fancy goods trade. A further recent addition to our range of products includes polythene lay-flat tubing. Our exports reach the whole of the Commonwealth, U.S.A., South America, Scandinavia, Belgium, Holland, France, Middle East, Far East. Approximately 25% of our production is exported.

R. H. Cole and Co., Ltd.
2 Caxton Street, London, S.W.1.
Raw materials for the plastics, paint, lacquer, leathercloth and allied trades.

THE demand of the export markets as a whole for all plastics raw materials increases year by year. As far as polystyrene is concerned, however, countries which a year or two ago took appreciable quantities today have their own local manufacture which meets demand and consequently they do not take supplies from this country. For example, in 1952 we sent several hundred tons to France but last year this quantity was reduced to a very few, and in 1954 we do not anticipate sending anything of any consequence. Similarly last year considerable quantities were sent to Australia but they now have their own local manufacture and whilst sizeable quantities are still being sent, before the end of the year this market will dry up also.

At the same time, however, the smaller markets such as Spain, Greece and those in the Far East, are increasing and this means an actual increase in total exports.

There has also been an increase in the demand for cellulose acetate moulding powder from many countries who presumably are following the trend which is prevalent in the United Kingdom; namely, that for greater strength and transparency of colour, moulders are switching away from polystyrene. Our approximate annual export sales are 2,000 tons at a value of approximately £450,000.

These include polystyrene, cellulose acetate flake, cellulose acetate moulding powder, reclaimed polythene, reclaimed p.v.c., predominantly hosepipe compound, urea formaldehyde moulding powder and p.v.c. scrap. These details include only materials exported directly and the figures would be increased by inclusion of indirect exports and exports through merchants, which we normally look upon as being home trade sales. Border-line cases such as methyl methacrylate monomer and polymer have also not been included.

The territories reached include Argentina, Australia, Austria, Canada, Denmark, Egypt, France, Greece, Holland, Hong Kong, India, Italy, New Zealand, Pakistan, Persia, Siam, Singapore, South Africa, Spain, Sweden, Switzerland and U.S.A.

Thomas De La Rue and Co., Ltd.
84-86 Regent Street, London, W.1.
Manufacturers of decorative and industrial laminates, floor tiles and extrusions.

OVERSEAS business is an important activity of the company, manufacturers of Formica, Delaron and Traffolyte laminated plastics, Plasvic floor tiles and a variety of plastic extrusions. We export our products to some 70 countries—from Norway to New Zealand.

The largest seller is Formica, overseas markets taking about one-third of output. In addition, this material is manufactured in limited ranges of patterns by associate companies in France, Germany and Italy. De La Rue report that pattern and colour preferences vary greatly from country to country. Bright coloured Onyx patterns, for instance, are the favourites in Australia, while in Switzerland the pastel Linette and Softglow patterns are preferred. Certain patterns are made specially for export.

Delaron, the industrial laminated plastic, is made in a number of electrical grades and also in a constructional grade whose high strength/weight ratio makes it preferable in many instances to wood or metal. Canada and South Africa are the chief markets.

Permanent signs in Traffolyte engraving material are to be seen in many countries.

De La Rue Plasvic floor tiles are in increasing demand abroad. The range has recently been extended to cater for both industrial and domestic users. The standard range now includes a non-slip tile.

Duraplex (Plastics), Ltd.
14 Caxton Street, London, W.1.
Specialists in sheeted and extruded plastics.

WE would inform you that our company manufactures and exports the following types of material: plain and embossed p.v.c. sheeting, 36 inches and 48 inches wide ranging from 0.006 in. to 0.040 in. thick, printed effects and designs on p.v.c. sheeting, p.v.c. extrusions, cotton-backed coated with p.v.c. for upholstery and travel goods. The territories reached are world-wide.

Erinoid Ltd.
Stroud, Glos.
Thermoplastic materials.

WE have always placed a great reliance in our export trade. For many years prior to 1939 the company were exporting approximately 50% of total output. Much of this went to countries now behind the Iron Curtain. In spite of these former main markets being closed, the post-war years showed the company vigorously engaged in the export drive. In 1946 exports were 20% of total output and this increased annually to 42% in 1953.

The original products of the company were casein plastics materials. Casein is an old-established material with a relatively small potential market for which the main competitors are Germany and France. British manufacturers, by advantageous long term contracts for the purchase of raw material from Commonwealth countries, are able to meet the competition and have lost only one important market, namely Turkey, due to a combination of import restrictions and German connections which existed in

EXPORT SECTION

1939. Exports to America are difficult because of high import duty and business is only possible in specialized materials and products.

In the world thermoplastics market conditions are quite different; the main competitors being U.S.A., Canada, Germany and Italy. The chief factors governing sales are: (a) quality; (b) price; (c) service. Erinoid Ltd., while always trying to meet competition regarding price, have placed their greatest faith on the factors of quality and service. The inferior quality market is always subject to the most severe competition and violent fluctuations, whilst the market for better quality products appears to be more steady.

Below are given Erinoid's export figures for the seven main export markets for the years 1951-52 and 1952-53.

	Casein		PVC.		C.A.		Polystyrene	
	52/3 %	51/2 %	52/3 %	51/2 %	52/3 %	51/2 %	52/3 %	51/2 %
British Commonwealth	22	44	6	15	17	15	31	22
South America ..	10	6	1	1	2	1	3	1
U.S.A./Canada ..	12	10	—	—	—	—	—	11
Scandinavia ..	1	3	53	55	42	46	14	11
Other European Countries ..	54	24	25	15	15	28	31	64
Far East	—	—	3	4	24	10	20	2
Others	1	13	12	10	—	—	1	—

Future trading prospects are good but business will not come easily. With the gradual relaxation of currency and licensing restrictions with the Commonwealth, that market is the brightest. In Scandinavia competition from Germany will become more intense. Other markets depend so much on currency restrictions, import licensing and political background influence, that the future is unpredictable and two of the biggest obstacles to overcome will be requests for extended credits and the necessity for stocks to be readily available in these countries. With first-class quality materials, good agents, deliveries on promised dates and a regular technical service from England, export sales should continue to expand.

Imperial Chemical Industries, Ltd.
Plastics Division, Welwyn Garden City, Herts.
Thermosetting and thermoplastics materials, moulding powders, acrylic sheet.

THE gross tonnage and gross value of three plastics materials exported by our company in 1953 is given below:

	Tons.	Value.
Vinyl products ... ... (polymer and compounds)	5,600	£1,370,000
Acrylic products	3,500	£2,310,000
Polythene products ... (excluding tube and film)	7,400	£2,734,000

In the case of the three products cited we expect the 1954 market to show a steady expansion and plant capacity is available to allow for this. The above figures are given as a general picture of trade as several types and grades of material are included in the comprehensive figures.

Quantities of phenolic moulding powders and urea moulding powders are not quoted separately but national export figures are published.

Langley London, Ltd.
Kelvin Way, Crawley, Sussex.
Manufacturers of electrical insulation, including mica, micanite and plastics.

OUR laminated plastics materials based on paper, fabric, glass and asbestos, bonded with various resins, are regularly dispatched to all parts of the world. Our service of recommending the best insulating material for each particular job is greatly appreciated in this connection.

Chas. Lowe and Co. (Manchester) Ltd.
Reddish, Stockport, Cheshire.
Phenol formaldehyde and cresol formaldehyde synthetic resins.

WE have done and expect to continue business on varying scales in Switzerland, Holland and the Commonwealth.

There appears to be a demand for synthetic resins, for adhesives purposes, for laminating and for the foundry industry.

Midland Silicones, Ltd.
19 Upper Brook Street, London, W.1.
Silicone rubbers, resins, fluids, etc.

AN increase of demand in all territories for all our silicone products is discernible. Our principal markets are Scandinavia, Holland, Italy and the Commonwealth.

Phoenix Rubber Co., Ltd.
2k Buckingham Avenue, Trading Estate, Slough.
Plastic flooring; reprocessed plastics.

OUR Phenco plastic flooring is well known throughout this country and a greater part of the world and the sales are steadily increasing both at home and abroad. Phenco plastic flooring based on p.v.c. is exported to Sweden, Denmark, Belgium, Holland, Switzerland, New Zealand, Australia and for small quantities elsewhere. The total exported during the past year amounts to approximately 25,000 yd. valued at £20,000. The flooring is exported both in continuous roll and in tiles.

We have a very considerable business in recompounding and reprocessing thermoplastic materials such as polythene and polyvinyl chloride. Very little of this is done directly for export but is shipped abroad by customers who have sent the material on a consignment basis. We estimate conservatively that during the past year a total of 50-60 tons of reprocessed polythene and polyvinyl chloride have passed through this works prior to export abroad by one or other of our clients at home. The value of such a quantity would be in the region of £15,000. It is probably shared between Europe and the United States.

Storeys of Lancaster
Storey Bros. and Co., Ltd., 104a Park Street, Grosvenor Square, London, W.1.
Plastics sheeting for curtains, bags, clothing, table-covers, etc.

WE find that we are doing an increasing business in our plastics materials in practically every export market, and, indeed, it is developing in a most satisfactory manner. We think this may be partly due to the fact that our executives, including our managing director, visit our export markets at very frequent intervals, and this enables us to investigate requirements on the spot.

We would say that the plastics products from this country are looked upon with favour in most parts of the world, and it does appear to us that this country is holding its own at present, although we are meeting increasing and severe competition.

In some markets they are very price conscious and demand goods at the lowest possible price, whereas in other markets our customers demand quality before price. When you come to think of it, this is quite understandable because in certain markets, particularly in the Far East, the bulk of the populace are very poor and can only afford the cheapest possible goods. In other markets, such as Australia, New Zealand and Canada the general run of people are comparatively better off and demand quality.

Utilex Ltd.
Mill Street, Kingston, Surrey.
Manufacturers of cellulose acetate transparent products.

WE would advise you that we manufacture cellulose acetate in sheets and films, clear transparent, coloured transparent and coloured opaque and that we export to most countries in the world. There seems to be a steadily increasing demand for our product.

Vinyl Products Ltd.
Butter Hill, Carshalton, Surrey.
Specialists in resin emulsions, vinyl emulsions and polymer solutions.

OUR exports continue to increase and we have more than trebled our overseas sales in the past two to three years, particularly for our Vinamul range of emulsions.

We are selling in the face of strong Continental competition in Scandinavia and the rest of Europe, and encouraging results have been achieved in the Dominions.

Our products are now manufactured under licences in the U.S.A., Spain, Italy and Switzerland, and France and Australia will be producing shortly. Licensing agreements bring in royalties which are invisible exports and in the case of the U.S.A. we are already earning appreciable sums in dollars.

Our associates Vinatex Ltd. are exporting considerable quantities of p.v.c. products in the form of compounds, pastes and coated cloth and paper all over the world.

Wiggins Teape and Alex Pirie (Sales), Ltd.
Mansell Street, London, E.1.
Papers for the plastics industry, including laminating papers, leathercloth base, etc.

THE laminating base and leathercloth base papers which we make for the plastics industry would be classified as raw materials. The total tonnage of these papers supplied to Australia, New Zealand, India, France, Belgium, Holland, Norway and Sweden increased between 1950 and 1953 by almost 400%. This only represents direct exports. There is every indication that the next few years will show a substantial increase in the volume of our business.

New markets are also being opened up in countries which are now putting down plant to produce plastic laminates and imitation leathercloth materials, instead of importing finished products, but import and currency restrictions in some countries only allow us to do a very small proportion of the business obtainable in a free market.

Customers are becoming much more quality conscious, a factor which often influences them to import these speciality papers in preference to buying them from local mills.

Moulders and Fabricators

EXPORT SECTION

Williaam J. Cox Ltd.
London Road, Tring, Herts.
Fabricators in "Perspex," rigid p.v.c., etc.

WHILE we are very conscious of the necessity for export, and very anxious ourselves directly to export, the business of "Perspex" and rigid p.v.c. shapers and fabricators renders the question of direct export by us somewhat complex.

A recent analysis made with the co-operation of our customers, showed that over 60% of the items which we manufacture to our customers' requirements are incorporated in instruments, machinery or equipment exported throughout the world.

We would, however, be very glad to receive inquiries from foreign customers for trade shapings for scientific, research or general industrial uses.

J. F. Kenure, Ltd.
Faggs Road, Feltham, Middlesex.
Moulders and Fabricators.

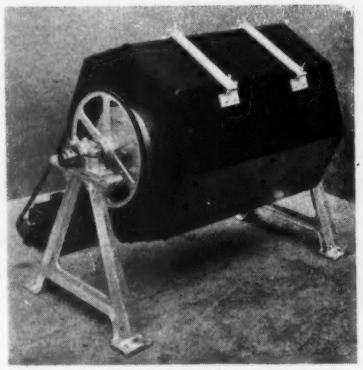
AS requested we have pleasure in giving you the following information regarding our exports in moulded and fabricated finished goods. They include polythene funnels, polythene measuring beakers, polystyrene and "Diakon" lampshades, p.v.c. cycle grips, polystyrene tissue dispensers, polystyrene tooth "cards," etc.

The goods are exported to the following countries: France, Belgium, Holland, Sweden, Italy, Cyprus, Malta, Syria, Persia, British West Indies, U.S.A., Canada, Mauritius, New Zealand, Australia, etc. The approximate annual value of direct exports is £15,000.

Lacrinoid Products, Ltd.
Gidea Park, Essex.
Moulders, manipulators and fabricators of plastics.

WE sell consumer goods, raw materials, and materials for industry, so we cover an exceptionally wide field.

Normally, we sell through agents on the spot, and may have as many as four different agents covering the same country (each handling a different group of products). There are still several territories, however, where we are not yet completely represented, and therefore we are always glad to hear from firms of standing who are well placed to sell our products.



Polishing barrel made by Lacrinoid Products Ltd. for a customer in the Fiji Islands.

The principal consumer goods which we make are compression-moulded buttons, and knobs, handles and door furniture of various types. In an increasing number of countries, such products are made locally, but we still sell to many of them and are doing excellent business elsewhere.

Our exports of finishing and polishing materials, and certain other raw materials, are increasing encouragingly. We are now beginning to export "Vietum" shrink covers and shrink sleeving, and expect soon to be exporting polythene bottles and "Lacrinyl" rigid p.v.c. tubing.

National Plastics (Sales) Ltd.
Avenue Works, Walthamstow Avenue, London, E.4.
Selling organization for British Moulded Plastics Ltd., and Moulded Products Ltd., Trade Moulders.

THE nature of our business is the provision of component parts made from plastics and we do not export these directly. However we know that a very large quantity of mouldings from this factory find their way abroad on motor cars, electrical equipment of all sorts but we have no figures.

Rediweld, Ltd.
15-17 Crompton Way, Crawley, Sussex.
Welding of polythene and p.v.c. for chemical engineering structures.

THE export of polythene goods such as pipes, blocks, rods and mouldings to many countries in Europe and overseas was an interesting proposition until approximately a year ago. Since that time plants for the production of polythene have been built under licence in Germany, Italy and France; for this reason the export of semi-finished and finished polythene goods became more and more difficult as local manufacturers protected by favourable duty tariffs can produce and sell at lower prices. Due to the fact that manufacturers in these countries in general have no great experience in the handling of polythene which is a relatively new material to them, their products do not reach the same degree of perfection as English polythene goods.

Continental and overseas manufacturers show a great deal of interest to acquire "know-how" and for this reason Rediweld, Ltd., has made technical service arrangements in order to help firms abroad with the design and erection of suitable plant and also to give periodical assistance in manufacture. This overcomes the difficulty of duty barriers and at the same time contributes a valuable means for exchange of information on a very broad scale. It also helps to assist export of special products which are used in conjunction with goods produced locally.

Thermo-Plastics Ltd.
Luton Road, Dunstable.
Fabricators and Moulders.

AS we are custom moulders, a large proportion of the work that we do for export is, of course, indirect export, and we find this particularly applies to such industries as the refrigeration industry, radio industry, engineering industry, etc.

With regard to direct export, we have been carrying out shipment of our standard lines to a large number of countries since we first introduced them on to the market.

For example, they have been shipped to Canada, New Zealand, South Africa, Scandinavia, France, Belgium, Kuwait, Egypt, Israel and various Far Eastern countries.

We have also recently found a great field opening abroad for the display signs that we are producing, and one type of sign, which is in the process of being manufactured at our works, is at present being dispatched to 54 countries.

As the reputation for the large mouldings, in which we specialize, becomes more widely appreciated, we are now finding that we are receiving inquiries from abroad for the production of component parts on large assemblies both for commercial undertakings and also for various industrial concerns. Examples of countries who have recently placed such orders are France, Sweden, Switzerland, Greece, etc.

Our total export percentage is generally in the region of approximately 70%-80%.

Combs

The British Comb Manufacturers Association
21 Tothill Street, London, S.W.1.

THE comb industry is to be congratulated on its recent export performance in the face of hot German and other competition. Comb exports in 1953 rose again after the setback of 1952 and in all exceeded £150,000. Nearly all of this total was accounted for by plastic combs, including of course the new nylon comb. Latest figures show that comb exports are running at the rate of over £16,000 a month. This is of course a fairly small proportion of the industry's total output: but, since combs are made in every industrial country and are one of the products that young countries turn to first, it is a record of which the industry can be proud. It is holding its own at home too, and imports are negligible. The countries of Europe are difficult and many of them still maintain artificial barriers against combs by way of import licensing restrictions and the like. Best markets abroad are in the Commonwealth and Empire and the Sterling Area, notably for instance West Africa and Australia; but combs earn dollars, too, and in January the U.S.A. topped the list of all markets for the first time. All in all, a good example of what can be done by a small but lively and enterprising industry.

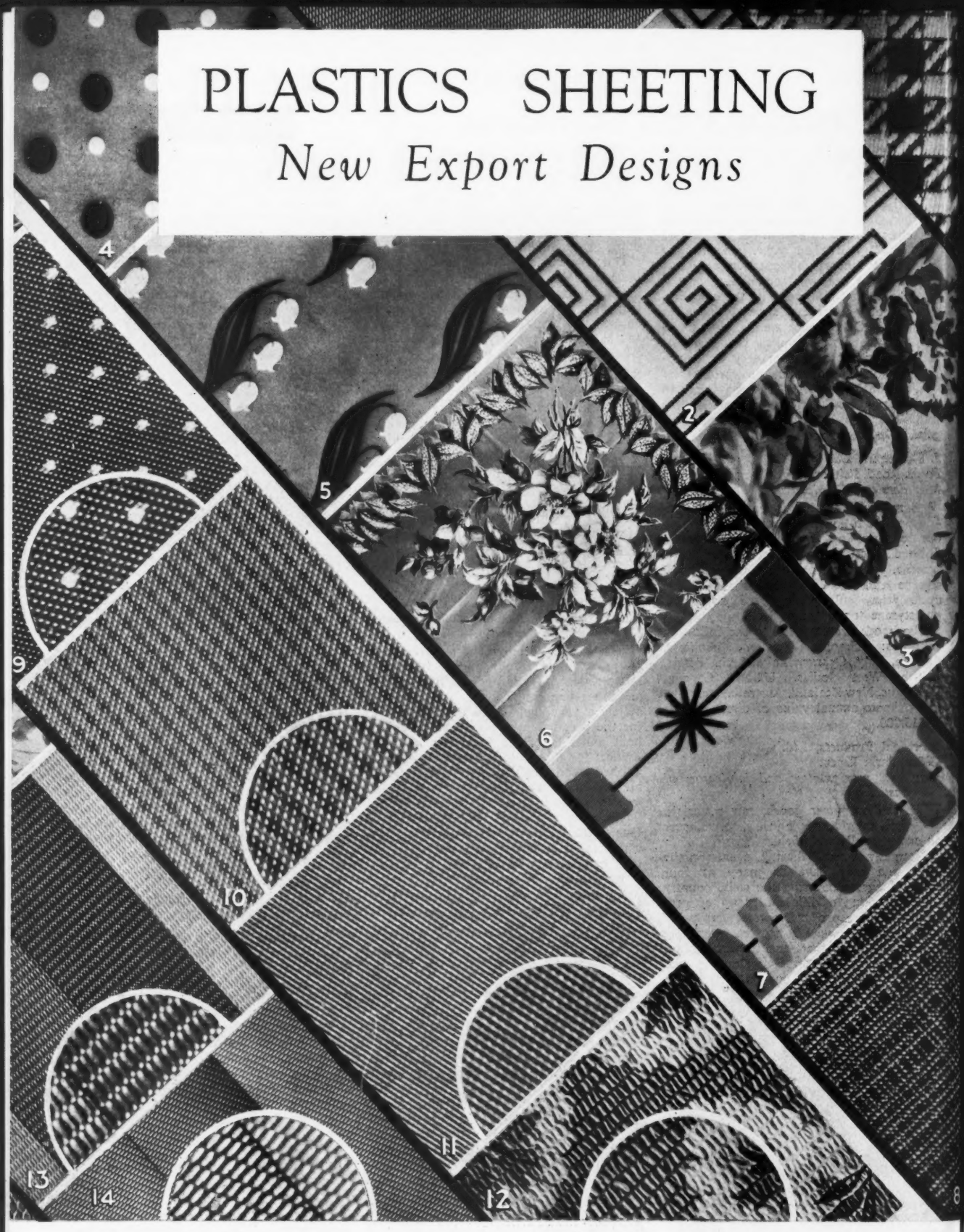
E. R. Holloway, Ltd.
Hyde Way, Welwyn Garden City, Herts.
Manufacturers of combs.

COMBS are made in three plastics materials—cellulose acetate, polystyrene and nylon. These are exported in large quantities throughout the world, the main markets are Australia and West Africa. For the latter territory the company makes a "Native rake" with large handle and teeth.

(*Continued on page* 148)

PLASTICS SHEETING

New Export Designs



THIN PRINTED SHEETING: New techniques now permit multi-colour printing of thin p.v.c. sheeting for such purposes as curtains, table-covers and rainwear. The designs on this page show a small selection from some of the principal British manufacturers.

Rubber Improvements, Ltd., Rilex Works, London Road, Wellingborough, Northants. 1.—Rilprint, two-tone pattern obtained by single colour printing on satin-embossed thin sheet—for rainwear. 2.—Rilprint, colour-printed on clear translucent sheet—for curtains, table-covers. 3.—Rilprint. blue floral design on clear translucent sheet—curtains.

B.X. Plastics Ltd., Higham Station Avenue. Chingford, London, E.4. 4.—Velbex Print, Household Range, polka dot design in two colours on embossed clear translucent sheet—curtains, etc. 5.—Velbex Print, Household Range: Lily of the Valley, two colours on clear translucent sheet—curtains.

Storeys of Lancaster, 140a Park Street, London, W.1. 6.—Multicolour print on translucent sheet for complete table-cover. 7.—Storeen three-colour design on translucent poplin grain texture—curtains. 8.—Storain "Saracen" design, printed white on black—rainwear.

THIN EMBOSSED SHEETING: By embossing thin calendered p.v.c. sheeting improv textures resembling woven textiles are obtained, enhancing—with or without additio printing—the quality and appearance of the sheet.

B.X. Plastics Ltd., Higham Station Avenue, Chingford, London, E.4. 9.—Velbex Aq range: "Tyne," printed dots, embossed both sides—rainwear. 10.—Velbex Aqua ran "Thames," printed one side, embossed both sides—rainwear.

Storeys of Lancaster, 140a Park Street, London, W.1. 11.—Storain "Gaberdene" fawn—rainwear. 12.—Storeen "Seersucker" grain, multicolour printing on opaque shee curtains.

Dunlop Special Products, Ltd., Kingsbury Road, Kingsbury, London, N.W.9. 13 Duvina, "cord" embossing on opaque sheet with metallic effect—rainwear. Available 0.004 in. and 0.005 in. thickness, 48 and 54 in. wide. 14.—Duvina, "twill" embossing (as

HEAVY SHEETING AND LEATHERCLOTH : In many industries, for many purposes, the thicker grades of p.v.c. sheeting and cotton-backed sheeting have been found useful, hard-wearing and attractive. Originally drawing their inspiration from leather grains, designers now produce a great variety of patterns and colours, of which these are only a small selection. Applications include handbags, travel goods, clothing and footwear, upholstery and panelling, motorcar seats and hoods, flooring.

Dermide Ltd., Valley Mills, Meanwood Road, Leeds, 7. 1.—Two-tone effect embossed p.v.c.-coated fabric—upholstery. 2.—Deep-embossed p.v.c.-coated fabric—upholstery, bags, etc. 3.—Florweave embossed p.v.c.-coated felt floor covering; (top) rib, (centre) floral, (bottom) hexagon design (all enlarged). 4.—Florweave p.v.c.-coated felt floor covering.

B.X. Plastics Ltd. 5.—Velbex embossed sheeting: "French Straw." 6.—Velbex embossed sheeting, grey "Snake."

Arlington Plastics Development Ltd., Barretts Grove, Stoke Newington Road, London, N.16. 7.—Arlinghide leathercloth : "Lustrette 4" cotton-backed, two-tone effect.

Bernard Wardle and Co. (Everflex), Ltd., Peblig Mill, Caernarvon, N. Wales. 8.—Everflex. Large multi-coloured floral design on lashio green with clear p.v.c. coating protecting the print. 9.—Heavy quality leathercloth for travel goods.

Vinatex Ltd., Butter Hill, Carshalton, Surrey. 10.—Vinatex, cloth-backed : "Chevron" embossing. 11.—Vinatex, cloth-backed : "Raffia," regency cream antiqued two-tone effect.

Imperial Chemical Industries Ltd., Leathercloth Division, Newton Works, Hyde Cheshire. 12.—Vynide cotton-backed leathercloth with two-tone embossing (actual size). 13.—Vynide, cotton-backed, two-tone embossing (actual size).

Storeys of Lancaster. 14.—Norzon fabric-backed material with electrostatically deposited "suede" effect.

Wallington, Weston and Co., Ltd., Vallis Mills, Frome, Somerset. 15.—Fromotan heavy unbacked sheeting : "Rhino." 16.—Fromotan heavy unbacked sheeting : "Piqué."

Mellowhide Products Ltd., 34, South Molton Street, Oxford Street, London, W.1 17.—Melloroid leathercloth, gold or silver effect beneath clear polished p.v.c. surface.

EXPORTS—THE INDUSTRY SPEAKS
(*Continued from page 145*)

Toys

Kiddicraft, Ltd.
Kenley, Surrey.
Manufacturers of Kiddicraft "Sensible" Toys

ONE of the pioneers of the plastic toy industry, this company continues to make progress in all parts of the free world and is now established in over 40 countries.

Separate Kiddicraft companies have been formed in France, Germany and South Africa to mould the complete toys in those countries, because the importation of toys from England is banned or strictly limited, but in all other markets the toys sold are exported from England, mostly as completely finished and boxed toys. However, Kiddicraft operate a separate company in the U.S.A. which imports the mouldings from England, and these are assembled and boxed in a very modern factory in Chicago. It is anticipated that the sales of Kiddicraft "Sensible" Toys in the U.S.A. during 1954 will be in excess of £300,000. By doing the final assembly and boxing in the U.S.A., considerable savings in freight and import duties are achieved and thus the toys are reasonably priced in this highly competitive market.

Kiddicraft, Ltd., have always relied on trade moulders in England for their mouldings both for home and overseas sales, and this policy has enabled them to increase their sales year by year to a far greater extent than would have been possible if the mouldings all had to be made in their own factory, because modern taxation would not have allowed for the constant expansion of the necessary factory space and plant.

The whole Kiddicraft selling organization overseas has been carefully planned and improved, and it has been discovered that the greatest possible volume of toy business can be achieved by holding stocks of complete toys in over 30 key points throughout the world.

When Kiddicraft used to rely on deliveries from English stocks to meet their Canadian orders, they were limited to a few dozen department stores throughout Canada, because the smaller shops, who now represent the backbone of their business, were unable to order in sufficiently large quantities to import from England, and they were not willing to undertake all the paper work involved with Customs clearance, etc. Kiddicraft, Ltd., now have over a thousand regular customers in Canada and all deliveries are made from stocks in Toronto.

The youngest member of the Kiddicraft family is Kiddicraft-Deutschland in Germany, which started selling at the Nürnberg Toy Fair in March, 1954. This is the first time that any foreign toy manufacturer has ever gone into Germany to make and sell toys. The moulds used to supply the German market are shared with Kiddicraft-France, which supplies France and the French Colonies, each company holding the moulds for any particular toy for a period of about three months.

All Kiddicraft "Sensible" toys are designed by Mr. Hilary Page, and their construction and packaging is uniform throughout the world. Mostly they are made from sturdy compression mouldings in urea formaldehyde, but several of the newer toys are now using injection moulded component parts. Copies and imitations have appeared all over the world, but these are not generally very successful because they are mostly "odd toys" and the shopkeepers prefer to sell a range of toys such as the sequence of Kiddicraft "Sensible" Toys, which includes a different toy for each stage of the child's development from six months to five years.

Nene Plastics Ltd.
Raunds, Northampton.
Dolls and toys.

IN 1953 the production of Rosebud dolls was 70% above that in 1952. The export figures were the greatest ever in the company's history at 32½% of total output. There are very few countries to which we do not export and the name of Rosebud is as well-known abroad as in England.

Radios

Bush Radio Ltd.
Power Road, London, W.4.

EXPORTS of Bush radio receivers housed in plastic cabinets reached very wide territories and there are 48 countries to which export receivers in plastic cabinets have been and are currently despatched.

Champion Electric Corpn. (C.R.V.T.C. Ltd.)
Champion Works, Newhaven, Sussex.

IN the past year we have sold about 5,000 radio receivers in plastics cabinets, to the value of approximately £35,000. These were mainly exported to the following countries: Turkey, Lebanon, Syria, Iraq, Persia, Venezuela, Peru, Bolivia, Costa Rica, Dominican Republic, British West Indies, Cyprus, and South Africa.

Electrical and Musical Industries Ltd.
Blyth Road, Hayes, Middx.
His Masters Voice and Marconiphone radio and television sets, electronic equipment, tape recorders, etc.

PLASTIC components are used extensively throughout our products which are exported throughout the world. Besides radio there is a market for equipment such as our waveform monitors and our tape recording equipment.

Pye Limited.
Cambridge.

PLASTICS cabinets are used on five of our export models, principally because export markets are very price-conscious and the plastic cabinets prove cheaper than wooden ones. Many overseas markets prefer wooden cabinets, but on the lower price receivers plastics are accepted provided the receivers are bright and attractive.

Thorn Electrical Industries Ltd.
105-109 Judd Street, London, W.C.1.

A LARGE proportion of our overseas radio business is based on models in plastic cabinets. Apart from the resistance of plastic material to adverse local conditions when suitable packing is used transit damage has proved infinitesimal.

Sobell Industries Ltd.
Langley Park, Slough, Bucks.

DURING the past year we have shipped radio sets in plastic cabinets to many destinations. Our principal markets have been in the Middle East, including Iraq, Iran, Saudi Arabia and Syria, but we also export to many countries in the Far East, Central and South America, West Indies and South Africa.

Refrigerators

English Electric Co., Ltd.
Queen's House, Kingsway, London, W.C.2.

OF the total U.K. exports of domestic appliances during 1953, £12 million can be credited to the sale of refrigerators. If this figure is to be maintained or bettered during 1954, an even greater effort on the part of manufacturers will be needed to meet increasing competition not only from the United States but from Continental manufacturers as well.

Last year English Electric refrigerators were shipped to over 100 territories from Iceland to Tasmania, from Hong Kong to British West Indies. Many of these overseas markets, dominated by American manufacturers in pre-war years, were open to British firms after the war, because of the shortage of dollars and the availability of sterling. This situation is changing rapidly with the trend towards freer international trade, the increasing availability of dollars, the growing production potential of Continental manufacturers, and the extension of preferential terms under which local manufacturers are operating.

To challenge these new conditions, English Electric have introduced two new refrigerators this year. Both models make extensive use of plastics components.

English Electric refrigerator.

EXPORT SECTION

CANADIAN SALES CAMPAIGN

As an example of the type of problems to be met in selling to overseas markets and the ways of overcoming these we describe the methods used by the British General Electric Co. (Canadian) Ltd., to sell a British electrical product, the Mutac switch made in England by the General Electric Co. Ltd., with mouldings produced at G.E.C.'s moulding works at Witton. The following account is given by Pat Benoliel, responsible for consumer goods sales for British G.E.C. (Canadian) Ltd. Since this article was written, orders from Canada for the Mutac switch have reached a total of over one million units.

OUR first thoughts concerning the sale of Mutac switches were directed at obtaining general acceptance of our products by architects, consulting engineers and electrical contractors.

Initially we assumed that what we had to offer was a silent-action switch at a very much lower price than the only known silent switch on the market, which is a mercury type. All members of our staff were briefed about the Mutac switch and a word-of-mouth campaign was preached. Transparent-backed plastic samples were supplied by our works so that we could demonstrate the action of our micro gap silver contacts. It was not long before we ourselves began to realize that there were terrific potentialities in the Mutac switch and that we would not be able to create any wild enthusiasm merely by advertising and selling a silent switch at less money. After all, people could well do without a silent switch, and our contemporaries, who had been marketing a silent switch for many years, had never hit any dizzy height in sales.

A series of trade magazine advertisements on the theme of a silent switch created a somewhat mild interest, but very little enthusiasm.

We, ourselves, knew that the switch was good for an exceptionally long life, so we investigated the technical reasons for this, and herein lay the answer to what we considered an excellent merchandizing campaign. We found that there were so many exclusive worthwhile features in our product that we could enumerate some fifteen on our catalogue sheet. By this method our various distributors would be "spoon fed" with the sales feature in the most concise way possible.

About this time our works came out with some endurance-test figures, and we were so impressed by these that we decided to play down the silent feature somewhat and be the first company ever to offer a lifetime guarantee with a switch. This really gave us something to shout about, as in a keenly competitive market, nobody had ever used this theme in connection with wiring supplies.

(Left) Miss Jeanne Bal, star of the Canadian stage, takes part in a competition to boost sales of the Mutac switch in Toronto.

(Right) The Mutac switch.

Despite the excellence of the product and its comparatively reasonable price, we soon discovered that there were many price-conscious contractors who would pay the least possible for a switch, i.e. 15 cents, and we would offer an item at about four times this value. To combat this, we suggested that if a man had to build to a price he should be persuaded to put just two of our switches into a house. We then provided him with a sticker approximately the size of our wall plate and suggested that he affix this over the Mutac switch. Wording on the sticker read:—

> "This Mutac micro gap silver contact silent switch is the finest switch obtainable. It has been installed by the courtesy of your electrician (gap here for contractor's stamp). This switch has a lifetime guarantee and will operate with a minimum amount of noise. For all replacements insist that you 'SWITCH TO MUTAC.'"

The last three words have been adapted as a sales slogan. We thought that a home owner, by reading the message on our sticker, might then be induced to ask the electrical contractor to install Mutac throughout his house.

Public interest was aroused at various exhibitions, and at the Canadian National Exhibition a novel feature was introduced by way of a Mutac competition. A competition was organized and participants were asked how many times people would operate Mutac A.C. switches when trying them out for themselves during the course of the Exhibition. Miss Jeanne Bal, starring locally in Toronto in the stage production of "South Pacific," was invited to participate in the contest and make a personal appearance. Prizes were awarded. These methods gained some publicity in the Canadian daily Press and focused attention on the switch.

As the autumn approached, the oil-burner season was upon us in Canada and we found that our switch far exceeded the horse-power rating specification of the Canadian Standards Association. We immediately applied for horse-power rating approval and, by obtaining this, we found an unexpected field of sales for our switch to control the motors of oil burners. During this period our initial span of trade Press advertising had gradually come to an end. By a great deal of personal contact, which included the lecturing of our wholesalers' salesmen at their sales meetings, we found that we were establishing a steady sale for our product in the trade.

So now we decided to direct our thoughts on selling our switch over the counter to " Mr. and Mrs. Everyman." The F. W. Woolworth Co. were quick to see the superior quality of our product and agreed to put small stock quantities in some 80 stores from coast to coast. The sales reaction from this was most disheartening. The switches were simply placed in the traditional glass square and no sales story was getting over to the consumer. We formed the opinion that as the average Canadian was somewhat of a handyman, we could build a good volume of sales through chain stores, electrical and hardware stores. We therefore decided to formulate an extensive sales campaign which would not only hit the trade, but also the man in the street.

We evolved an original package for the switch in the form of an attractive three-coloured card which resembled a wall plate. All our competitors packaged their switches individually in a most unattractive cardboard box. Our card bore the Mutac story in a few words.

An attractive counter display card on which a switch could be mounted displaying an invitation to a would-be purchaser to try the switch for himself was released. About this time two nation-wide advertisements in *Time* magazine and the *Weekend Picture Magazine* appeared. The *Time* magazine offered a free sample to consultants, architects and senior business executives who applied on their official business letterhead. Adequate distribution work backed up this intensified campaign and sales of the switch rose in a satisfactory manner.

The " Switch to Mutac " catch phrase was used wherever possible and a plate was introduced into our postage meter, so that now all our letters are stamped " Switch to Mutac."

An intensified direct-mail advertising campaign was launched and a not-too-technical description of the Mutac switch was sent to all consulting engineers, architects, electrical contractors, hardware stores, hospitals and hotels throughout the country. This was followed up with a four-page reprint from a technical journal.

Our future thoughts must be to get the word " Mutac " so implanted in people's minds that when they think of a toggle switch they automatically think of " Mutac." This can only be accomplished by continually putting the name before the public, and thought will be given to spot radio advertising and even flashes on television.

All this, to the British way of thinking, may seem a rather extreme effort to sell such a small product, but by so doing we can sell a far greater volume per head of population than could be sold on the European Continent, and it is only by publicizing the item feature by feature that such results can be obtained.

EXPORT SECTION

The Reluctant Exporter

By D. R. MURISON SMALL*

MANY companies in the plastics industry export their products very successfully, but there are far too many others whose products are equally suitable but who export nothing at all, and it is for them that this article has been written.

Probably the chief reason why so many business men neglect export opportunities is that they are terrified by the unfamiliar terms, regulations and documents that confront them—not to mention the realization that special packing is probably required, and the uneasy suspicion that there may be something else of vital importance to do after all the points listed in the text books have been covered.

There is no need to be afraid. If you wish to master matters of routine procedure and the necessary documentation, you will find that there is nothing *difficult* about normal export business and that everything will seem quite simple after a little practice—all you need is care. When in doubt, your bank manager will gladly help you.

If you still feel tired at the thought, or decide that it is a waste of your time to bother about details that any quite ordinary shipping clerk can tackle, hand over this part of the work to some suitable organization and plunge straight into the creative side of export business. If this still presents difficulties (perhaps because no one in your own organization has enough spare time to take on extra work and correspondence), employ some suitable firm or individual to run your entire export department on a commission basis, unless you feel justified in employing an experienced sales manager.

The first step, of course, must be to find out where there is a market for your goods.

If you make consumer goods of a type easily made without expensive machinery, you will find that practically every industrialized country in the world makes similar goods locally. In order to help the local manufacturers, the governments of such countries usually either impose high import duties on competing goods from other countries or exclude them completely by refusing to grant import licences to would-be importers. Although this may rule out the possibility of exporting such articles to industrialized countries, a very substantial market may exist for them in countries where they are not manufactured locally; and it is surprising how much business can be done in the aggregate by selling to all the islands and other non-industrial markets that are so often neglected by British manufacturers.

Currency difficulties and shortages often constitute an artificial but very formidable barrier to sales, particularly in countries outside the Sterling Area. Just as the British Government refuses to grant import licences freely to British firms who want to import unessential goods from dollar countries, so countries that are short of Sterling allocate licences with care and confine them to essential raw materials and other necessities.

Whatever may be thought of the help available to exporters at the Board of Trade (a subject on which opinions vary greatly), there is no doubt at all that this is a useful source of factual information about the import policy, regulations, and rates of duty applicable to your product in each country.

A great deal of statistical information is available also from the Board of Trade (some of it being published regularly by H.M. Stationery Office), from trade associations, from public libraries, and from commercial attachés at foreign embassies in London. It is usually possible to find out quickly what are the principal markets for any broad product group and the principal sources from which each country imports supplies of such products.

Having listed the markets most likely to buy your product, the next problem is to tackle those markets. This, in turn, entails several preliminary steps.

First, you must decide on the best method of packing your product for export—it may be wise to take outside advice

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EXPORT SECTION

on this, and in any case it should be remembered that your products may have to cross the equator or may be stowed near boilers, and that normally the packing cases or other containers will not be returned when empty.

Next, you will have to decide on prices. The easiest basis to calculate is the "F.O.B." price, which may be briefly described as the price of the crated goods when delivered on board the ship at the British port (leaving it to the customer to arrange and pay for freight and insurance). Remember that, if you are going to sell through agents, the price must cover their commission, which will usually be 5% or 10% of the net invoice value, according to the type of product.

Many overseas buyers, however, are likely to insist on knowing exactly what your product will cost them, and ask you to quote a "C.I.F." price (meaning cost, insurance, and freight all paid). Obviously the freight will vary with the distance, but *not necessarily in proportion to the distance*; and unfortunately there are several variable factors to consider. The best way of arriving at a C.I.F. price that will be profitable but competitive is to make inquiries through a shipping agency, naming some of the most probable quantities and destinations. One fundamental point in this connection is that the shipping companies may charge either by weight or volume, whichever involves the higher charge—the charge "per ton" may mean either "per 20 cwt." or "per 40 cubic feet." As plastics products are usually light in weight, the charge is likely to be based on volume.

Unless the probable buyers of your product in each country are all so large and important that their names and addresses are easily ascertainable (e.g., the national broadcasting corporation, or the local manufacturers of aeroplanes), it is almost essential, as a rule, to sell to or through some local agent or importer or distributor.

If you choose a firm of importers or distributors, they will order in bulk on their own account and look after all local details, which is a great help. An agent, on the other hand, is "on *your* side" of any argument, and makes sales on a commission basis to your best advantage and his. There are pros. and cons. for each type of local representative, and the choice may vary according to the country. Again, if you sell more than one type of product, you may need to appoint a different representative for each, although it is usually more convenient to appoint the same firm for all your products whenever reasonably practical. As a general rule, it is best to appoint two or more specialized firms in a large country, whereas in small countries and islands it is customary for the best agents to handle every type of product.

Obviously the most suitable representative is likely to be one who already calls on your potential customers on behalf of other manufacturers whose products do not compete with yours. This means that, when appointing a local representative, you want to know what else he sells (and to what type of customer) as well as having independent confirmation that he is both active and reputable. You should, therefore, provide for this information on a questionnaire which you will send to all prospective overseas representatives together with some notes on your products.

There are many ways of finding out the names and addresses of suitable representatives, and you should certainly invite the help of the Board of Trade and of your own trade association. It is often very helpful to enlist the co-operation of other British exporters whose products do not compete with yours but are sold to the same types of customer: if they sell through local representatives (not being large enough to have their own branch offices overseas), they will often be very willing to help—their overseas representatives will appreciate being recommended for an additional agency, and such an arrangement may be helpful to all concerned.

It goes without saying that it is always a good plan to visit a prospective representative in his own country, so as to see his office and staff (if any) and to meet some of his customers who may also become *your* customers. It is also very desirable that your overseas representatives should visit your factory, so as to have a better understanding of your products and problems. Again, at a later stage (when you have developed your export business to a reasonable extent), it is always advisable to visit your chief customers personally (probably accompanied by your local representative) so as to gain first-hand knowledge of their reactions to your products—indeed, this visiting is definitely *expected* in countries that are within easy reach of Britain. Direct personal contact is of very great importance in building up confidence and developing business.

On the other hand, you cannot spend more on foreign travel than is likely to be justified ultimately by results. Again, you cannot be in two places at once and may find it very difficult indeed to visit the Continent of Europe, let alone the Dominions, the Far East, and South America. It is amazing, however, how much can be done by a series of well-planned visits to one country at a time, by air, with a full programme of meetings arranged in advance—your absence from your factory need not be longer than the absence imposed by an attack of influenza! Again, you may find it possible to arrange regional meetings of your representatives (e.g., seeing all your Scandinavian representatives together in one of the northern capitals); but, of course, you should always make a point of seeing each representative alone, before or after any joint meeting.

No mention has been made of the language difficulties which you may encounter. Fortunately, English is very widely understood by businessmen throughout the world; and when travelling abroad you should have very little difficulty in most countries—if necessary, the local British Embassy or travel agency can put you in touch with good interpreters.

Although English is so well known, however, it is wise to use a reliable translation bureau occasionally for correspondence, especially when it is important to ensure the correct interpretation of some letter or other document. Again, it is usually helpful if your sales literature is available in French, German and Spanish, at the very least (as well as in English); but a draft translation should be shown first to those of your representatives who speak these languages in case a translator who is not familiar with your product has made some technical error or failed to explain a point clearly.

If you have appointed a good representative, you will probably receive orders direct from his customers, as well as through him. Again, when the goods are dispatched, you may have to write direct, naming the ship carrying the goods and stating what has been done with the "Shipping Documents." It is extremely important that your representative should receive a copy of every order acknowledgment, and every invoice, as well as of every outgoing letter to one of his customers. This applies also, of course, to the "Pro Forma Invoice" which is necessary in some countries when your customer is applying for an import licence.

Sometimes you will receive an "Indent." This usually represents an order which has been taken by your representative in one of the Dominions and is set out on *his* printed form; but, as a rule, it should *not* be regarded as a firm order —it is probably merely advance information about an order that will soon reach you officially from a London "Confirming House" who will give you all necessary forwarding instructions and be responsible for payment.

Well, what about it? The time to start exporting is NOW.

EXPORT SECTION

Thermoplastic Materials

A Survey of the Export Situation

By H. J. FRENCH, Export Manager, B.X. Plastics Ltd.

THE thermoplastics industry, in common with other branches of industry, suffered a severe setback during 1952 in export markets.

It is encouraging to note, however, that since the second half of last year a very marked improvement has taken place, and the same trend still continues this year.

The fall 18 months ago was very much heavier than anticipated, and it took place at a time when production on the Continent, in particular Germany, was first showing signs of recovery. The improvement, therefore, which has taken place has been under extremely competitive conditions, and success has been achieved due to the recognition by British manufacturers of the need for giving special consideration to export markets, and showing greater flexibility in export terms and, above all, giving due importance to quality and delivery.

The relaxation of import restrictions by the Australian and New Zealand Governments has contributed much to the overall improvement. Exports to those markets have been further assisted by the rapid progress which is being made in those countries in finding new applications for thermoplastics.

South America, on the whole, continues to be disappointing, and Brazil, which has always been a substantial market for thermoplastics, is short of Sterling, and what little is available is ear-marked for capital goods.

Argentine, on the other hand, has made great strides in offering reciprocal trade with this country, and whilst licences are not yet freely granted, business is once again possible with some degree of continuity.

Spain also is a country which is looking once again to us to cover part of their requirements in thermoplastics. One difficulty experienced here, however, is the short validity of import licences, but efforts are being made to have these extended for a period commensurate with the manufacturing time.

Portugal continues to offer Britain a market for plastics, without having to indulge in cumbersome licensing formalities. There is evidence, however, that the German and French manufacturers are making a strong bid to share in it.

Of the other Continental markets, it can be said that most of them are free, or where licence procedure exists this is little more than a formality. Business in these markets is governed to a very large extent on having the material available at the right price at the right time.

The rapid development of plastics in Germany during the past three years has been used to advantage. Germany, before the war, was satisfying a big percentage of the plastics requirements of Eastern Europe. Those countries, however, no longer offer the same scope for Germany, inasmuch as a rigid licensing scheme operates, and some of the manufacturing facilities which were available to Germany at that time are now part of the Eastern Bloc. In addition to this, new plastics industries have been established in Eastern Europe, so that Western Germany is having to look to Western Europe for its outlets. Here, again, domestic manufacture in the majority of countries not only has made them self-sufficient domestically, but has given them also an opportunity of exporting. There is hardly a country in the whole of Western Europe that is not today producing from basic raw materials to satisfy both home and export requirements. It is evident, therefore, that the European market is extremely competitive.

A market showing marked signs of industrial development, and therefore giving new scope to the plastics industry, is the whole of South Africa. This country, prior to the war, was satisfying its needs mainly by imports of consumer goods. Whilst there is still a market for these, there is also a sizeable fabricating industry developing, and this will show further big developments within the new few years.

Of the Oriental markets, India and Pakistan offer undoubtedly the biggest scope. On the thermoplastics side these markets thought of very little other than celluloid in pre-war days, and this was satisfied mainly by cheap Japanese manufactured articles. This material, however, is no longer as important as it was, and what is being imported is more in the nature of raw materials than finished articles. Here, again, the post-war period has encouraged the development of secondary industries, and this, aided by a somewhat stringent import policy, is likely to expand rapidly.

Another important market in the East is Hong Kong, with its hinterland. Owing to the restriction on the movement of strategic materials agreed upon between the Allies, trading with Hong Kong has been somewhat spasmodic. It is quite evident, however, that some of the large shipments to Hong Kong, which have received official sanction as not being of strategic importance, have found their way to China. More recently, as a result of relaxation, Shanghai has itself figured predominantly as a buyer.

Moulding powders seem to offer the maximum scope. If a local report is to be accepted it would seem that manufacturing interests in the Shanghai area are producing plastic consumer articles based on imports of powder from this country for export to the satellite countries of Eastern Europe.

There is no doubt that if as the result of the latest trade discussions some of the difficulties can be eliminated, Hong Kong and Shanghai will again come into their own.

Japan, whilst being an important market for plastic goods, is in a position to supply most of these from indigenous sources. Of the new thermoplastics, several are now either in production, or will be in the near future, based on joint co-operation between Japanese and American companies. Japan is exporting both raw materials and finished articles, but on a smaller scale than pre-war. The new developments which are taking place there have as their immediate target to satisfy domestic needs, but the importance of exports to their national economy almost dictates participation in export trade as well. It is unlikely, however, that in any of these developments there will be such a wide disparity between Japanese prices and those of other producers as previously.

South East Asia has become more important to plastics raw material manufacturers than at any time previously. This is reflected in the import licensing policy of a number of these markets—such as Indonesia, Burma, etc.

Summarizing, therefore, it is fair to say that in spite of increased competition in thermoplastics throughout the world at large, there are no grounds for despondency among British manufacturers. Production as a whole is increasing, but so also is consumption, and the potential increase is encouraging.

It is absolutely essential for all firms anxious to develop their export trade to have first-hand knowledge of their markets and, above all, to see that they are adequately represented. Furthermore, the special requirements of individual markets must be acknowledged.

Export Facts and Figures

EXPORT SECTION

For statistics on the British Plastics Industry, apart from those prepared by the British Plastics Federation and which are not available to non-members of the Federation, the authoritative source is the Stationery Office publication "Accounts Relating to Trade and Navigation of the United Kingdom." Published monthly, the accounts summarize import and export figures under various headings, giving both values and weights. Much of the tabular and other matter which follows is based upon information contained in these accounts. In addition, we are grateful to the Union des Syndicats de la Transformations des Matieres Plastiques (Union of Plastics Fabricating Organizations of France), and to our contemporary, "Australian Plastics," for statistical information, which we publish herewith.

IN his preface to this export issue, the President of the Board of Trade refers to the figure of 16 million pounds, the value of direct plastics exports for the year 1953. It is, of course, a relatively small sum when weighed against the value of total exports; for example, the Austin Motor Company sends about 17 million pounds worth of A40 cars abroad every year. Nevertheless, in relation to the total income of the plastics industry itself, the figure is considerable, and when it is realized that "invisible" exports are not included, it assumes major dimensions. Invisible exports are those which find their way abroad as components in assembled structures; for example, the multitude of plastics parts in the average motorcar, plastics for long-playing gramophone records, and plastics in domestic cleaners, to name only a few applications in units sold abroad in large quantities.

Sixteen million pounds represents the exports of raw materials, moulding powder, and sheet, rod, tube, film and foil. The detailed constituents are shown in Table 1, together with a comparison for the previous three years. It will be seen that whilst the value is greater than in 1952, it is still slightly below 1951. It is, however, over 56% greater than in 1950.

Annual Tonnage

Table 2 shows the same divisions in tons. Here can be seen a steady increase over the past four years in the export of unplasticized vinyl resins, reaching a figure of some 6,600 tons in 1953. Small as this may seem, it represents roughly 19% of Britain's total production of p.v.c. a year. When it is added to the figure of 3,094 tons for plasticized material, the percentage is raised to 27, a not insignificant figure when one relates it to the demand for p.v.c. in the home market.

Future Trends in Export of P.V.C.

It is, of course, dangerous to speculate as to future trends purely on the basis of statistical information. However, the fact that p.v.c. production is expected to be doubled in Great Britain in the next few years may well enable the manufacturing companies to increase these figures substantially. The 1953 value of p.v.c. exports (plasticized and unplasticized) was over two million pounds, and the doubling of this tonnage would place p.v.c. in a very favourable position in comparison with other materials sent abroad. As an indication of what may be expected, Table 3 offers a comparison of the first two months of 1953 with those of 1954. Allowing for the very short periods under review, the export of vinyls was up by 84%. The overall total increase for British exports, in tons, for the two months under review was 50%. This is certainly an encouraging sign of the Plastics Industry's export effort.

As will be seen from Table 3, all the scheduled plastics showed an increase in 1954 as compared with 1953, with the exception of laminated materials. In addition to vinyl materials, the increases are particularly noteworthy in the case of urea resins, acetate, and phenolic moulding powders, and acrylic sheet. The last-mentioned is of special interest, in that for the total for 1953 it was the largest single item, as far as value was concerned, at £1,861,764, next to plasticized and unplasticized vinyls, and this despite the fact that in tonnage it was 30% only of the vinyl tonnage.

In general, both Tables 1 and 2 reflect the recession of 1951 and 1952, and it can be argued that the improvements which are now apparent are due to the generally improved trading conditions, and to the reopening of markets in Australia and New Zealand. The value of these markets may be judged by the contents of Table 6, showing that of a total import value of 1,256,218 Australian pounds, £A1,019,842 was purchased from Great Britain, for the quarter ended September, 1953. Again, although it is not an entirely satisfactory comparison, if the figures for the year 1953 as a whole are four times those of the quarter quoted, Australia

TABLE 1. BRITISH EXPORTS OF PLASTICS MATERIALS ANNUAL VALUES (STERLING)

	1950	1951	1952	1953
Synthetic Resins	£	£	£	£
Vinyl Resins (Unplasticized)	508,928	725,912	712,180	1,356,821
Plasticized ..	939,887	1,029,951	978,740	911,906
Other Sorts ..	1,400,164	2,858,717	2,364,498	2,788,964
Moulding Powders				
Cellulose Acetate	903,541	1,556,107	348,108	658,618
Phenols	389,813	456,551	313,287	194,293
Urea	544,052	832,891	586,442	752,768
Other Sorts ..	986,217	2,230,957	2,181,715	4,531,410
Sheet, Rod, Tube, Film and Foil				
Laminated ..	946,703	1,952,869	2,088,869	1,175,723
Acrylic	1,301,920	1,659,752	1,803,745	1,861,764
Celluloid ..	379,699	413,645	270,169	190,868
P.V.C.	435,413	1,277,959	994,214	635,223
Other Sorts ..	688,112	1,326,865	972,836	1,054,679
Totals	9,124,449	16,322,176	13,614,813	16,112,937

TABLE 2. BRITISH EXPORTS OF PLASTICS MATERIALS ANNUAL TONNAGE

	1950	1951	1952	1953
Synthetic Resins	Tons	Tons	Tons	Tons
Vinyl Resins (Unplasticized) ..	2,652	3,271	3,135	6,599
Vinyl Resins (Plasticized) ..	3,517	3,352	2,917	3,094
Other Sorts	10,322	18,124	14,788	17,593
Moulding Powders				
Cellulose Acetate..	2,870	3,259	829	1,943
Phenols	2,791	2,608	1,429	1,143
Ureas	3,186	4,481	2,967	3,817
Other Sorts	3,711	6,764	6,116	14,362
Sheet, Rod, Tube, Film and Foil				
Laminated	1,439	3,853	3,892	1,951
Acrylic	1,964	2,581	2,702	2,902
Celluloid	594	504	321	249
P.V.C.	891	2,196	1,765	1,274
Other Sorts	1,215	2,126	1,445	1.613
Totals	35,152	53,119	42,306	56,540

TABLE 3. BRITISH EXPORTS OF PLASTICS MATERIALS

A comparison between the first two months of 1953 and 1954

	1953	1954	Increase or Decrease %
Synthetic Resins	Tons	Tons	
Phenolics	321	346	+ 7
Ureas	789	1,398	+ 77
Vinyls (Unplasticized)	682	1,253	+ 83
Vinyls (Plasticized)	352	658	+ 86
All Others	1,182	1,644	+ 39
Totals	3,326	5,299	
Increase % : 59			
Moulding Powders			
Acetate	259	494	+ 86
Phenolics	120	235	+ 95
Ureas	655	736	+ 10
Totals	1,034	1,455	
Increase % : 40			
Sheet, Rod, Tube, Film and Foil			
Laminated	318	310	— 3
Non-laminated:—			
Acrylic	356	613	+ 72
Acetate	35	68	+ 94
Celluloid	34	40	+ 17
P.V.C.	167	212	+ 26
Totals	910	1,243	
Increase % : 36			

represents roughly a quarter of our overseas markets. General comparisons in terms of tonnage only may be made in Table 4. This shows most clearly the general decline that was experienced in 1952, particularly in exports to Australia, and the state of affairs in 1953. Violent fluctuations are discernible and the recovery of our export position in many countries would appear to be slow. As in the case of Australia, however, local restrictions and economic crises still defeat even the most highly organized sales campaign.

There are many other figures which are available to the diligent seeker after knowledge and which throw an interesting light upon the value of Britain's plastics export industry. One aspect of the export position which has not been mentioned hitherto in this review covers machinery. Although a specific figure for plastics alone is not available, for the year

TABLE 4. BRITISH EXPORTS OF PLASTICS MATERIALS—COUNTRIES REACHED

	1951	1952	1953
	Tons	Tons	Tons
Union of South Africa	3,458	2,751	3,339
India	2,747	2,496	3,372
Australia	5,741	3,514	8,506
New Zealand	3,023	2,297	2,063
Other Commonwealth Countries	4,735	5,502	6,758
Irish Republic	666	609	756
Finland	2,194	1,691	1,764
Sweden	3,452	2,188	2,796
Norway	1,496	1,141	2,014
Denmark	2,374	1,870	2,794
Holland	4,475	2,639	3,389
Belgium	3,399	2,696	2,765
France	2,824	2,359	2,614
Switzerland	1,376	1,095	977
Italy	1,603	1,607	985
Austria	736	515	483
Egypt	452	351	104
Brazil	1,637	969	102
Argentine	1,158	194	1,592
Other Foreign Countries	5,568	5,819	9,363

EXPORT SECTION

1953, £2,081,798 worth of plastics and rubber working machinery was sent abroad, as compared with £1,202,428 worth in 1951. With the increase in production of moulding and extrusion compositions abroad, and with the gradual satisfaction of the demand for machinery in the home market, it may be expected that machinery exports will, if anything, increase, although in certain territories there are indications that machinery itself will tend rather to be home built. For example, in a communication to us from the Union of Plastics Fabricating Organizations of France, it was stated that injection moulding machines above 500 gramme capacity are, to a large extent, imported from abroad in the following order: U.S.A., Great Britain, Italy, and Germany. It is expected, however, that, as from 1955, as a result of the efforts of French machine manufacturers to put on the market presses of international class, the import of such machines will diminish or, at any rate, will not increase to any great extent.

Imports

It is also of interest to compare Britain's imports of materials in relation to exports. The tonnage of vinyl resins exported in 1953 was, as previously noted, 9,700 tons. Imports for the same year were 2,450, and have shown a steady decline since 1951, when our imports amounted to 4,633 tons. A similar position exists in the case of polystyrene when, in 1951, we were importing 1,587 tons, which is now reduced to a third of that figure, namely 571 tons.

Of all the plastics materials imported into this country, the biggest source is from the U.S.A., amounting to 4,419 tons in 1953, as compared with 5,745 tons for 1951. The next largest source is Western Germany, amounting to 2,383 tons, a figure which has remained relatively stable when compared with the 1951 figure of 2,439 tons. The biggest decline that is noticeable is in the case of Canada which, in 1951, supplied this country with 3,935 tons of material, now down in 1953 to 876 tons. No figures are available for France, but it is clear from the information supplied by the Union of Fabricating Organizations that that country is taking active steps to rectify the situation which at present applies. Production of plastics materials in France in 1953 was estimated at 50,000 tons. Eleven thousand, four hundred and

TABLE 5. FRANCE—IMPORTS OF PRINCIPAL PLASTICS MATERIALS, 1953 (TOTAL AND IMPORTS FROM U.K.)

Designation	Weight in Tons		Value—(Unit 1,000). Fr.	
	Total	U.K.	Total	U.K.
Phenolic moulding powders	32.9	8.1	7,564	1,723
Phenolic emulsions and solutions	137.9	111.7	22,959	10,954
Phenolic semi-finished goods	95.2	71.8	59,697	52,090
Aminoplastic moulding powders	693.0	312.1	148,665	62,058
Aminoplastic emulsions and solutions	928.8	292.8	213,168	52,101
Aminoplastic semi-finished goods	90.8	3.1	72,701	557
Polyvinyl chloride	1923.1	268.2	480,074	69,385
Acrylic and methacrylic derivatives (styrene, etc.)	721.0	80.3	263,760	33,617
Polyvinyl resins	5526.1	562.5	1,313,190	148,258
Polythene	1319.7	622.9	642,845	279,864
Super-polyamides	9.3	—	13,634	—
	11477.8	2333.5	3,238,257	710,607

seventy-seven tons of material was imported as shown in Table 5, roughly 23% of the national production, Great Britain being the largest supplier, after the United States. The demand in France for imported materials remains mainly for thermoplastics, amongst these in order of importance, special grade polystyrene materials, p.v.c. and polythene. The high price level of French plastics materials and, in consequence, of their plastics products, due to the high cost of basic materials, makes it extremely difficult for the French plastics industry to compete on the international market. In addition, France applies a tariff system on imported plastics materials, which ranges from 15% on cellulose acetate and phenolics to 30% for polyesters, acrylic moulding powders and p.v.c. film. This is necessary to give temporary protection to new productions of the French plastics industry. The situation would, therefore, seem to be one of gradual expansion with the object of reducing raw material prices. It is difficult, therefore, to see any sign of an extending market for Britain in France.

In fact, so far as the French are concerned, every effort is being made to re-equip and modernize the plants of the materials producers with a view to reducing costs, and thus permitting the French plastics industry to compete in world markets, both with materials and manufactured products.

British industry, in general, is experiencing vastly keener competition in export markets than was the case a few years ago, as is evidenced by remarks made by various company chairmen noted on page 156. This is, of course, true for the British plastics industry, and competition abroad may be expected to increase with greater intensity. Our principal competitor, the U.S.A., has now been joined by Western Germany, and Canada also may be expected to take a larger part in the export field. In 1947 the Canadian plastics industry produced goods to the total value (ex works) of 11,782,525 dollars. The figure for 1951 was 39,370,423 dollars, an increase of 230%

One of our most important markets, India, has recently further liberalized its import policy by raising the quotas allotted to certain goods. These include such plastics components as plugs, sockets, lampholders, spectacle frames and p.v.c. leathercloth. The amount that India spends on British imports has risen from 16 million rupees in 1950/51 to 23 million rupees in 1952/53. Excluding the U.S.A. and Canada, imports from other countries have also risen, from 900,000 rupees in 1950/51 to 4 million rupees in 1952/53, evidence of the expanding exports of other countries.

EXPORT SECTION

TABLE 6. AUSTRALIAN IMPORTS OF PLASTICS MATERIALS—QUARTER ENDED SEPTEMBER, 1953

Information from the Commonwealth Bureau of Census and Statistics, reproduced from *Australian Plastics*, January, 1954.

Particulars	United Kingdom		U.S. of America		Total all Countries	
	Quantity lb.	Value £A	Quantity lb.	Value £A	Quantity lb.	Value £A
Condensation Plastics						
Phenolic Resins	17,099	2,906	3,488	734	27,752	5,300
Alkyd Resins	49,636	6,329	8,079	1,648	140,524	18,940
Organic Nitrogen Resins	83,870	9,722	3,240	458	90,266	11,109
Other Condensation Plastics	41,314	4,370	8,211	1,109	59,330	6,372
Polymerization Plastics						
Acrylic Resins	39,381	15,928	—	—	39,381	15,928
Vinyl Resins	1,424,380	168,049	6,565	1,218	1,463,117	175,598
Polyolefin & Polyaromatic Resins	338,264	76,881	—	—	338,275	76,891
Polystyrene Resins	2,554,089	456,631	72,612	11,033	2,665,100	473,509
Miscellan. Polymerization Plastics	488	387	95	198	13,893	3,352
Protein Plastics (thermo-plastic)						
Protein Plastics	6,852	1,346	—	—	6,852	1,346
Cellulose Plastics						
Cellulose Acetate or Cellulose Acetate Butyrate	2,988	721	198,445	34,813	201,433	35,534
Other Cellulose Plastics	11,201	1,123	—	—	11,201	1,123
Carbohydrate Plastics	112	77	—	—	112	77
Synthetic Elastomers by type						
Polymerized Rubber Chloride Elastomers	—	—	—	—	—	—
Synthetic Elastomers by type N.E.S.	11,208	1,321	209,647	35,771	221,896	37,300
Plastic Materials N.E.S.	35,151	8,815	65,032	14,987	126,592	28,835
Synthetic Resins, Blocks, Rods, Sheets, etc.						
Casein or containing Casein	38,684	18,069	—	—	40,745	19,798
Celluloid	33,356	15,262	8	56	55,146	24,495
Cellulose Acetate	12,270	6,910	84,219	52,851	111,046	67,305
Amino type	—	—	—	—	—	—
Phenolic type	6,524	2,124	11,089	3,333	17,613	5,457
Vinyl or Vinylidene type in any polymerized form	35,376	5,770	10,568	4,370	58,164	13,076
Other Plastic Moulding Materials						
Pliable	33,534	22,330	115	95	50,608	26,425
Non-pliable	537,055	175,974	157	155	562,700	182,711
Casein or other Protein Plastics	—	8,535	—	538	—	10,592
Celluloid	—	3,032	—	11	—	4,027
Cellulose Acetate or Cellulose Acetate Butyrate	—	2,128	—	2,437	—	5,045
Articles of laminated Plastic N.E.S.	—	2,770	—	143	—	3,444
Synthetic Resin, Xylonite or similar materials	—	2,052	—	14	—	2,629
Total	5,312,832	1,019,842	681,570	165,972	6,201,746	1,256,218

EXPORT SECTION

Invisible Exports

The facts and figures on the previous pages relate to the export of raw-materials, moulding powders, sheet plastics of various kinds, and machinery. They represent, however, only part of the export story; plastics go abroad in countless guises, as components in radios, cars, in fountain pens and long-playing records. The following paragraphs, extracted from company reports in the "Financial Times" during recent months, throw some light on the export activities of some of the large companies who make use, in considerable quantities, of plastics materials.

Mentmore Manufacturing Co., Ltd.

Manufacturers of fountain pens.

"A SUBSTANTIAL part of the increase in profit is accounted for by a very definite recovery in our export trade, due to the fact that the Governments of Australia and New Zealand relaxed restrictions considerably on imports of our type of goods into their respective countries. Also, trade generally improved and our overall turnover in Platignum and Mentmore writing instruments was considerably increased during the year. I am very pleased, therefore, that the prediction which I made in my last report to you that we could look forward to a satisfactory year has proved correct. . . . Our turnover is, to date, well ahead of the same period last year, and there is every indication that trade will continue to expand."

Ilford, Ltd.

Manufacturers of photographic materials.

"AS a large part of our business is in export markets it is of great importance to us that our costs should remain competitive. Up to the present we have been able to meet foreign competition in price and quality, but a comparatively small increase in our costs could weaken our position. While we can to some extent control costs in our own factories by paying attention to means of avoiding waste and increasing efficiency, we can be seriously affected by factors beyond our control, such as the increases in the cost of fuel and transport recently announced, which will affect all industry. It still does not seem to be as widely realized as it should be that an increase in costs of production this coming year can have a crucial effect on the level of employment in the next few years. . . ."

Lines Brothers, Ltd.

Toy manufacturers.

"EXPORT trade has recently shown considerable improvement following the setback due to embargoes and other trade barriers, and we have been hard put to it to execute all the trade offered for immediate delivery. Our design and development building has been very fully occupied with many new and attractive articles which we are sure will be in great demand."

The British Motor Corporation, Ltd.

Manufacturers of automobiles.

"THE extension to the assembly plant in Sydney, Australia, is proceeding apace. The buildings of the assembly plant in Cape Town, South Africa, are completed and now await the installation of equipment. New companies have been formed in East Africa, Rhodesia and Canada. . . ."

The Decca Record Co., Ltd.

Manufacturers of gramophone records, radios, gramophones, radar and electronic equipment.

"IT may interest you to know that we have already sold over 9,000,000 long-playing microgroove records with sales for the current year substantially in excess of those of any previous period since their introduction. This total is equivalent to more than 40 million 78 r.p.m. shellac records, a tremendous production even for an industry which talks in millions. The long-playing record business in this country, although improving, still lags behind other countries and is, we believe, in its infancy. I am glad to be able to report that both in the U.S.A. and Canada we have maintained our competitive position during the current year with increased sales. Sales of our television-radio department will show a further advance over those of the previous year. . . . The following statistics illustrate better than anything I can say the remarkable expansion that has taken place in the seven years from the end of our financial year in 1946:—

	1946	1953
Salaries and wages	£157,000	£1,592,000
	sq. ft.	sq. ft.
Area occupied ...	125,000	*630,000
Turnover	£1,026,000	£7,320,000
Exports and overseas sales included in the above turnover	£89,000	£3,458,000

*1954

Hoover, Ltd.

Manufacturers of cleaners and washing machines.

"IN former years we have been almost entirely excluded from the New Zealand market by rigid import restrictions. I am glad to say that import licences are now no longer necessary in this country.

"The dollar markets are well known to be difficult and it is therefore gratifying to be able to record progress. Our exports to the United States during 1953 were more than three times as much as in 1951 and more than four times as much as in 1952. There is scope for developing worthwhile markets in the United States. . . .

"In a number of Central American countries we have made some progress. We are endeavouring to develop the Mexican market."

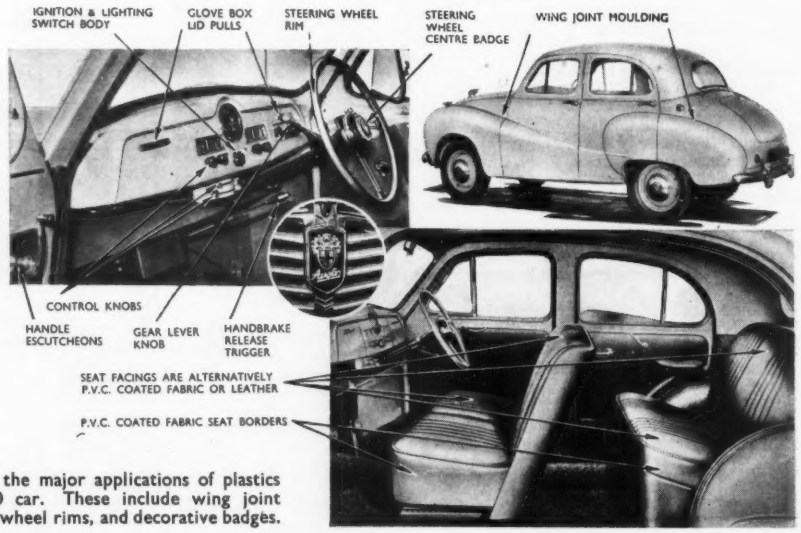
English Electric Co., Ltd.

Electrical, mechanical, hydraulic and general engineers, and contractors and aircraft manufacturers.

"ALTHOUGH our 1953 export shipments exceeded those of 1952 it is a fact that the incoming overseas orders for heavy capital goods have not, during 1953, been so great as in former years. We must not get too depressed at this occurrence, for, from time to time, an overseas country wishing to purchase capital plant may reach the limit of its immediate financial resources.

"Our company, as exhorted by successive Governments, has made every endeavour to expand its overseas business to meet our country's need, by entering markets in which we have hitherto taken no direct part, and nothing has given us greater satisfaction and stimulation than the receipt of orders in the United States of America which contribute dollars needed by us to pay for our essential purchases from U.S.A.

"I would here pay tribute to the work of the Export Credits Guarantee Department with which we have worked closely since its inception in the early 1920s. We are thankful for all the help we have received from the Department during these 30 years."



The illustration shown right outlines some of the major applications of plastics mouldings and fabrications in the Austin A40 car. These include wing joint mouldings, seat facings, control knobs, steering wheel rims, and decorative badges.

Official Services to Exporters

EXPORT SECTION

The principal source of assistance to exporters is the Export Services Branchof the Board of Trade. A short review of the work of this department follows, and full details can be obtained by communicating direct with the Board of Trade. The British Plastics Federation supplies specific advice and guidance to its members. In addition there are many Foreign Chambers of Commerce in London, and typical of the assistance available is that of the Swedish Chamber described on page 159.

GOVERNMENTAL SERVICES AVAILABLE TO EXPORTERS

TO those who use them there is no mystery about the export services offered by the Board of Trade. For others there may be some advantage in indicating the nature of these services so that detailed information may be obtained if required.

The initial point of contact with the Export Services Branch of the Board of Trade can either be through its London headquarters, which is at Lacon House, Theobalds Road, London, W.C.1, or one of the regional or district offices of which there are some 21 throughout the country. Each of these offices has an export section that works in close alliance with headquarters and the Regional Controller or one of his staff is ready to call on any firm on request.

Services Available

Having indicated the availability to any manufacturer of the Board of Trade service, it is worth considering the type of assistance that can be given. A very useful publication entitled "A New Guide to Government Services for Exporters" was published in 1953. Copies are available free of charge from the Export Services Branch and the booklet opens by quoting a few of the hundreds of queries that are answered by the Service every day. Some of these are worthy of reproduction inasmuch as they will give comfort to the manufacturer who, in the throes of licensing regulations, dollar restrictions and import duty restrictions, is seeking some fairy godmother to provide him with the answers. "What local conditions have to be kept in mind in making goods for selling in Indonesia? Could you give me the names of likely importers of my products in Switzerland? Messrs. X of Johannesburg have offered to handle my products. Are they a suitable connection? I am going on a business trip to North America, what help can I get on the spot?" These are all questions which the Export Services Branch is pleased to answer, thus constituting a service of the greatest possible value to any exporter.

Export Credits Guarantees

As an extension of this work, the Export Credits Guarantee Department, 9 Clements Lane, London, E.C.4, insures against some of the risks of export trade. Abbreviated to E.C.G.D., the system insures exporters against many trading risks, chief amongst which are the insolvency or protracted default of the buyer, delay in payment because of exchange restrictions, or frustrations of contacts through the imposition of import licensing restrictions abroad. In the last financial year over £500 million of U.K. exports were ensured by the Department. The Service also provides assistance to enable exporters to find additional capital through their banks or obtain better discount rates on Bills of Exchange, and in particular "Dollar Drive" policies exist specially designed to help exporters to establish or increase the level of trade with Canada and the U.S.A.

The booklet is worthy of close study particularly since the Board of Trade in its drive to stimulate a healthy export industry spends considerable sums of public money on seeking out the sort of information that potential exporters in this country need. For example, it is the job of the overseas officers to seek out and report back every opportunity which may exist in the country in which they are stationed for selliing Brtish goods. Besides collecting information to satisfy individual inquiries, an overseas officer provides in his reports news about commercial and financial matters affecting the local demand for U.K. goods, inquiries from would-be buyers of different kinds of companies, and other data of interest to manufacturers. All this is classified by trades and companies and can be supplied in selected parts as the Special Register Information Service at a nominal cost of 50s. a year. The Export Services Branch also maintains lists of importers of various products in most countries, keeps records of the standing, activities and influence of many overseas firms, will make inquiries about any particular firm on request, such as suitable agents, give information about Commonwealth and foreign tariffs and import controls, advise overseas posts of impending visits by British business men. In the last mentioned case, the Service includes the arrangement of introductions to individuals by the overseas officer who will prepare the ground for the visitor as far as possible.

From the foregoing information it will be seen that the Board of Trade machinery for assisting the exporter is extensive and extremely valuable. It is not possible, however, within the scope of a short review of this nature to itemize in detail all of the various aspects of the Board's work. However, literature is in existence describing various services which are available and offering specific information on particular problems such as "Markets in the Caribbean," a survey of the dollar account countries of Latin America. The main Board of Trade publication is the weekly Board of Trade Journal which contains official announcements, reports about home and overseas trade, tariff changes and reports of economic conditions overseas. A special series entitled "Overseas Economic Surveys" deals exhaustively with trade conditions in the more important world markets.

A particularly valuable series of booklets is entitled "Hints to Business Men." Some 62 separate booklets are obtainable, covering countries from Norway to Bolivia. For example, "Hints to Business Men visiting the Netherlands" is a booklet of some 24 pages which commences by describing travel, hotels and general amenities. Convenient routes are given together with fares, internal communications are described and hotel accommodation and costs are scheduled. An appendix to this section gives the names and addresses of some 31 Dutch hotels. General information as to currency, weights and measures, banks, postal and telephone facilities and travel agents is also given.

This is followed by a brief description of the economic structure of Holland, detailed information in import and exchange control regulations and customs duties, information on shipping documents and marking of goods, debt collection and advertising. A bibliography of books of reference in the English language is given and also English language Dutch trade papers.

These booklets are full of down-to-earth practical information. They are of the greatest value to any company which proposes to do business abroad. The information has been compiled by people who have had long experience in overseas markets and who are familiar with local customs. Awareness of these points can do much to stimulate successful business operations in the country concerned.

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THE BRITISH PLASTICS FEDERATION

THE British Plastics Federation, 47-48 Piccadilly, London, W.1, is the trade association of companies engaged in all branches of the plastics industry, and represents raw materials manufacturers, machine manufacturers, moulders and fabricators, etc. The facilities given to the export activities of its members are outlined below.

The Federation is also interested in receiving commercial inquiries for British plastics materials and products, and will pass these on to suitable member companies.

Bilateral Trade Negotiations

The Federation, by consultation with its members, prepares briefs for the United Kingdom negotiators in the various bilateral trade negotiations, and thus ensures that the interests of the plastics industry are put before our negotiators so that they may take any opportunities which arise for the establishment of suitable quotas for United Kingdom products and materials which the plastics industry produces.

G.A.T.T.

The Federation is consulted by the Board of Trade on all matters affecting the plastics industry in connection with the General Agreement on Tariffs and Trade.

Brussels Nomenclature

The Federation has considered the definitions which affect the plastics industry in the draft proposals for the international classification of customs tariffs, and has put

(*Continued on page* 159)

Dissertation on the Difficult Art of Getting Fun out of Exports

Some Notes for Those who Know Nothing About It at All

By AN. LANCELOT DOGSBODDY, Jr., Chairman, Sub-Oceanic Gold Mining Syndicate (Export Division).

TO begin with, you have something to sell abroad which generally means that you already sell in the home market and have an excess of it or rather can produce an excess. And you can at least start out on a few optimistic premises:

(1) You know your stuff is as good as you can make it.

(2) Ipso facto, because you sell it here, there is also somebody else somewhere in the world who wants it, too.

(3) The job of selling abroad has the same general picture as that at home but with different colour schemes which you have to learn about. Sometimes the design is like a modern work by Picasso or Henry Moore, but you find out what it means eventually.

Things are not so easy as they were four or five years ago, as many other "technical" countries are now producing raw materials, machines, and moulded and fabricated components and units, too, so that price, apart from quality and delivery dates, is of exceptional importance. What is also apparent is that many "not-so-technical" countries want to be self-sufficient in plastics manufacture. Even so, we can always sell something provided the customer can pay and provided the tariff walls are not too high.

If you, as a director or manager, want to export, you must first decide to which countries you can do so, so the first thing is to run round to the Board of Trade and worry the officials who are there to help you. What with the lovely lot of figures they have ready for you to look at, the excellent new "Hints to Business Men" visiting almost every country in the world and containing everything from the addresses of hotels to addresses of the local U.K. Trade Commissioners and the useful information that "sock-suspenders" are called "garters" in Canada, you start out on the right foot. In addition, you should read the Board of Trade Journal, the Encyclopædia Britannica and the journals of the British Chambers of Commerce abroad. And, of course, you should spend a week or so in the Patents Office Library (which doesn't only contain patent literature) looking up all the foreign journals on plastics to learn the health of the local industry.

By then, at least you will not do as one of O. Henry's little heroes did. He was told that the natives of inner Guatemala wore no boots or shoes, so to remedy this appalling state of affairs and to make his own fortune as a side-line, he took a small ship-load with him, only to discover that (a) they preferred walking through the jungle without them, and (b) even the belles and beaux of the village who did possess them wore them on Sundays round their necks up to the church doors and then only put them on. When they hobbled painfully out they immediately took them off, hung them round their necks again and went off perfectly happy.

However, having decided that either Ruribania or Timbuctizuela is a good market for your stuff, has no large poly-tetraiodoethylene plants, not even a two-ounce injection machine and would welcome three-way 5-amp. plugs, you should go round to the commercial attaché's office in London and get the rough direction in which the country lies and any information he has regarding the economic set-up, import duties, licences and so on that exist. As a matter of fact the Board of Trade publish most of this information, but it will all be good experience.

The next step is to know your selling-price, which will be something higher than your home price as you've got to use a boat to get it overseas; so you've got to find out what f.o.b. and c.i.f. mean and what manifests and bills of lading are. You can get all this information by lurking round the docks and asking Customs people, but if you don't want to touch it with a barge-pole you can always get a shipping company to do it all for you as they're only too glad to earn a few extra bob nowadays. Of course, in reality, before you know where you are you'll be getting an export manager who knows all the answers, and he in turn will be getting a shipping clerk to do his work for him. However, you should know something about this shipping business yourself: your export manager will be very impressed, kept on his toes and will call you "sir." By the way, at this point you should realize that your customers don't always think of things in pounds weight or firkins or ells. And if you sell to the U.S.A., remember that except for the decimal coinage system they're just as bad as we are. Don't forget a U.S. gallon is only 3.8 litres, whereas ours is 4.54 litres. The difference lies in the fact that the American unit is derived from the volume of a cowboy five-gallon Stetson and ours from the volume of Sir Winston Churchill's hat of 1926. Sad, but almost true.

Now at some time or other you must get cracking about getting an agent in Ruribania or Timbuctizuela and you must hop over to see if the geography books are telling the truth.

Obviously if you're good at languages you're well away, and you hang round the local coffee-stalls and caravanserais and get your information from the local barber or the man who sells you pretty post-cards. I could spend hours telling you how important languages are, not only because you can order spaghetti à la Ruribania and the local brew without doing gymnastics with your hands and feet but because, as Dr. Lange, Prime Minister of Norway, told us recently in his B.B.C. broadcast, such knowledge is the greatest step to the promotion of understanding of nations. After all, it's not very satisfying, after having crossed two deserts and a river full of crocodiles in Timbuctizuela on your own flat feet and no knowledge of Timbuctizin, to meet the local Paramount Chief and to think he's telling you to buzz off home again, when all he's trying to tell you is that he's crazy over the 200-ton press you've just shown him and will you come in and have one for the road.

However, in the matter of agents, it's worth while spending a lot of time over. You should first realize that it's as much his living to sell your stuff as it is yours—he's on your side and you should know his difficulties and he should know yours. Of course, he probably sells pianos or sausage skins or railway sleepers also, but as they're not competitive it doesn't matter. He'll do his best to keep you in touch with

EXPORT SECTION

changes (not half he won't when your competitors start dropping prices!) and tell you of things like tariffs and licences and that the Compañia del Lejáno Cielo won't touch your mouldings because one of the directors knows the sister of the sales director of Bloggso S.A. who manufacture that awful rubbish that busts into pieces when a child handles it and you'd better get cracking about the said sister yourself.

In general, if your stuff is "technical," you should try and get an agent who is something of an engineer or a chemist. And you've got to plug him with all you know about your own materials, specifications, information about applications and behaviour, how it's shipped and so on, and from time to time with technical or semi-technical articles to put in the local trade journals—they're always winners.

By now you will have sent your agent a goodly supply of samples and perhaps a bulk consignment for stock and before you know where you are the first orders have been coming in, and you're breaking your neck giving good deliveries. But don't think that things will always go smoothly. Now and again the rough comes along. It may be that your consignment has got mixed up with five tons of second-hand bedsteads and has gone on to Hankow instead of to Sao Paulo or the whole lot which went as deck-cargo has got a trifle wet during a rough passage and you must put in a claim to the shipping company. These little matters you'll deal with pretty easily but the more difficult ones take a little longer, as when your agent sadly reports that your customer complains that (a) you've sent him short weight; (b) he's discovered a pair of old army boots at the bottom of a 40-gallon drum, or (c) that you sent him green moulding powder when all he can sell is pink garden hose and in any case it won't go through the extruder. When you've got through these little troubles and have told him to take the cork out of the extruder nozzle, you'll be getting well and truly into your stride.

Of course technical complaints are somewhat more difficult to solve as you're far away and you can't go rushing to Split or Belize every week-end and it may be that while your agent may not know one end of an impact testing machine from another, your customer does and much else; so don't go jumping to the conclusion, just because he's puzzled why he can't get your extraction results on your moulding, that he is using the local brew of vodka instead of acetone. Or again the complaint may be a purely chemical one, that the cobalt naphthenate you sent out to go with his polyester resin is claimed to be 5.95% metal content instead of the specified 6% and may they have a one per cent. rebate by return please and your competitor's stuff is never below 6%. By chivvying your chemist you find (a) your own sample is really 6%, or (b) it *is* 5.95%, or (c) that the laboratory cat has knocked over your own retained sample and you can't recheck. If it is (a) you can tell your customer what you think of him and his chemist in which case you've lost his custom for life; if it is (b) you pay up and look pleasant and say it was an oversight and, of course, it can't possibly happen again and trusting this little contretemps will not be allowed to affect our hitherto delightful association. If it is (c), well, I haven't the faintest idea how you get over that one, but no doubt your ingenious mind will enable you to wriggle out of it somehow. Remember that the customer is always right or nearly so.

Of course there are other types of difficulties such as when Ruribania can't pay because the local haddock crop has failed two years running and you're offered payment in 20 years with 3% interest until then; or when Timbuctizuela tells you that it would not touch your stuff with a barge-pole because your own beastly Government won't issue importing licences for their own basic export of hula-hula skirts or when the Government of Cimbalia has French francs only and could you please wangle an export through your pals in France and look what a nice nest-egg you will have when you next go to see your agent in Juan-les-Pins.

If you can deal ably with this sort of thing you will find things are quite satisfying, that in any case your competitors have exactly the same brain exercises to ponder over and finally that life is really pleasant after all.

OFFICIAL SERVICES TO EXPORTERS

(*Continued from page* 157)

forward suggestions which were felt to be necessary. We have also been in communication with similar organizations in other countries on this matter.

Token Exports

The Federation administers the quotas for certain products under the scheme for Token Exports to France.

Tariffs and Licensing

The Federation is frequently in touch with appropriate Government Departments regarding specific problems of members on overseas tariffs and import licences. Information is sent regularly to members regarding customs and licensing regulations in overseas countries, European liberalization and other general information on overseas markets, including summaries of market surveys.

Inquiries

The Federation receives a large number of inquiries, invitations to tender, applications for agencies, etc., from overseas organizations which are passed on to its members. A number of inquiries also come direct from Her Majesty's Trade Commissioners in various countries. The Buyers' Guide for Plastics Materials which was published in 1953, was produced initially with the main object of supplying information to Her Majesty's representatives overseas on the products available from the British plastics industry. Copies were made available to Trade Commissioners and were also sent to a number of other overseas representatives.

Exhibitions

The Federation receives details of a number of overseas exhibitions and is usually able to advise members regarding exhibiting or visiting such exhibitions.

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THE SWEDISH CHAMBER OF COMMERCE FOR THE UNITED KINGDOM

The Swedish Chamber of Commerce was founded in 1906 by a group of prominent Anglo-Swedish business men and is one of the oldest Anglo-Foreign Chambers of Commerce in Great Britain. Its aims are to protect, extend and in every possible way promote commercial and industrial intercourse between Sweden and the British Empire.

With the passage of years the Chamber has become a recognized focal point for Anglo-Swedish economic interests and has established close co-operation with the principal commercial and industrial institutions as well as Government departments in Great Britain and Sweden. It is therefore well qualified to assist its members in many of the increasingly complicated problems that continue to arise in foreign trade and to bring together prospective sellers and buyers, agents and principals in both countries.

Members can also be provided with general background information needed in connection with Anglo-Swedish trade, such as facts relating to import and export regulations, customs formalities, sources of supply, suitable forms of representation in either country, market requirements, statistics, advertising media and other information that can be gained from an intimate contact with business and official circles. Letters of introduction are provided for members and travel plans drawn up.

The Chamber is prepared to mediate between members in commercial disputes and as a final resort the Arbitration Committee of the Council is at members' disposal.

A further duty of the Chamber is closely to follow developments in Anglo-Swedish trade relations and when deemed suitable to make representations to authorities in either country on matters affecting the interests of any considerable body of members.

Membership of the Chamber is open to any person, corporation or incorporated association interested in commerce between Sweden and the British Empire, subject to approval of the Council. The membership subscription is £5 5s. per annum, there being no entrance fee.

Aerial view of B.I.F., Castle Bromwich.

BRITISH INDUSTRIES FAIR, 1954

The Fair will be open from May 3—14, and will be in three main parts, Castle Bromwich, Birmingham, and Earls Court and Olympia, London.

ADVANCE reports of the B.I.F. have, if anything, offered rather a dismal view of the situation. Various Press accounts have given the impression that interest in the exhibition was falling off and it was, therefore, with mixed feelings that we contemplated a full-scale review of the B.I.F. this year in so far as it affects the plastics industry. In accordance with normal practice the advance catalogues were examined and firms which we knew to be connected with the plastics industry were duly circularized. Results have been gratifying in that although many of the larger plastics companies are not, in fact, exhibiting, nevertheless the overall picture seems to be that the plastics industry has maintained its stake in this highly important event.

The falling off in attendance of the larger companies has principally affected the London branches of the Exhibition, Earls Court and Olympia; whereas in previous years a separate plastics section has been organized, this year plastics companies have merged into other relevant sections. This is to be regretted in that the visitor to London who is anxious to study the plastics industry as a whole will find no convenient centre on which he can focus his attention. On the other hand, the trend seems to be towards the incorporation of various specialized branches of the plastics industry into the industries which they serve, with the result that several sheet manufacturers are now exhibiting in the textile section. This last-mentioned section has supplied one of the most noticeable advances in technology to be seen at this year's Fair. The installation of new plant and improvements in technique have accounted for a considerable expansion in colour, texture and patterns of sheet p.v.c. materials, in both supported and unsupported forms.

Sheeting of a superior finish is now available in rainwear, curtaining and domestic upholstery, and two of the most important companies which have been responsible for this situation are B.X. Plastics and Storey Brothers.

At Castle Bromwich the emphasis is upon machinery and industrial applications. As might be expected, no spectacular advance in the machinery field will be shown, but nevertheless the machinery manufacturing section of the industry continues to constitute a highly important facet of the export market.

On the application side developments are noted in the use of p.v.c. for chemical plant, laminated materials for industrial components and p.t.f.e. for special electrical purposes. From the advance information obtained no clear picture has emerged as to the progress in applying glass fibre laminates, but it is expected that a number of new fabrications will be shown for the first time.

This review of the Exhibition has been arranged in the following order:—Birmingham, Earls Court, and Olympia. In the case of Birmingham the code letter attached to the stand number denotes in which section the stand concerned will be found; There are four main sections: Group A, Hardware; Group B, Building and Heating; Group C, Electrical; and Group D, Engineering. For the convenience of buyers at home and overseas, the address of each company has been included in the stand-by-stand review.

For the London section the stand number is coupled with code letters thus: O., Olympia; E.C., Earls Court. Again, manufacturers' addresses have been included.

GUIDE TO B.I.F. SECTION

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CASTLE BROMWICH

A review of plastics companies and others who use or sell plastics components and fabrications, covering the four sections into which the Birmingham Section is arranged.

GROUP A
Hardware

E. K. Cole, Ltd. **A320**
Plastics Division, Ekco Works, Southend-on-Sea, Essex.

ONE of the country's moulding organizations, the company will be showing a selection of injection and compression mouldings, including proprietary articles such as a baby's bath, sink tidy, dust pan and washing-up towels.

W. T. French and Son, Ltd. **A605**
Browning Street, Ladywood, Birmingham, 16

THIS company manufactures various electrical accessories from thermosetting materials and examples of these will be shown together with the company's other products which cover various fields including agriculture and domestic appliances.

Halex, Ltd. **A516**
Highams Park, London, E.4.

A FULL range of the company's products will be displayed. These include the well-known Bex household articles, such as kitchen bowls, buckets, food containers, and beakers. Other fabrications will include melamine table-ware, wall tiles, refrigerator boxes, and plain and decorated trays.

Thor Hammer Co. **A638 and D234**
Salop Street, Birmingham, 12.

FABRICATED from polythene, the hammers manufactured by this company have been used for several years in industry.

Windolite, Ltd. **A400**
Harlow, Essex.

WINDOLITE, wire-reinforced cellulose acetate sheet material is being shown principally in various garden applications. Among these will be a greenhouse and cloches made up from Windolite.

GROUP B
Building and Hardware

Evered and Co., Ltd. **B327**
Surrey Works, Smethwick 40, Staffs.

EXHIBITING on two stands the company will be showing on one a wide range of products manufactured for the hardware industry from plastics materials, including door handles, laboratory fittings, etc.

Robert McArd and Co., Ltd. **B407**
Denton, Nr. Manchester.

SPECIALISTS for many years in the moulding of plastics, the company will be showing a full range of sanitary seats in a wide range of attractive pastel colours. A special feature will be seats in marble or shadow effects. Also shown will be display units custom mouldings, various cores and textile bobbins.

Shires and Co. (London), Ltd. **B700**
Greenbottom Works, Guiseley, Yorkshire.

MANUFACTURERS of several products designed for the building trades, the company will be showing W.C. seats moulded from thermosetting materials.

GROUP C
Electrical

Association of British Chemical Manufacturers **C617/516**
166 Piccadilly, London, W.1.

INQUIRIES will be answered and information supplied on the activities of the Association. Amongst the companies represented will be Albright and Wilson, Ltd., A. Boake Roberts and Co., Ltd., British Glues and Chemicals, Ltd., W. J. Bush and Co., Ltd., Coalite and Chemical Products, Ltd., The Distillers Co., Ltd., Imperial Chemical Industries, Ltd., Monsanto Chemicals, Ltd., and Shell Chemical Mfg. Co., Ltd.

Bakelite, Ltd. **C404**
12-18 Grosvenor Gardens, London, S.W.1.

EXHIBITING in the electrical section, the company will be showing a wide range of moulding materials, including phenolics, polystyrene modified with rubber, glass-filled materials and alkyds. In addition, the use of Bakelite resins in adhesives will be demonstrated in the field of lamp and valve capping, grinding wheels and brake linings.

Polyester resins will be featured, with articles on show demonstrating the very wide range of uses to which these resins can be put. These will include reinforced laminated housings, castings, low-pressure mouldings and components potted for protection from shock.

Bakelite laminated sheet, tube and rod will be demonstrated, with particular reference to its application in the electrical industry, and also on display will be the Vybak range of p.v.c. compounds, embracing extrusion and moulding materials, rigid and flexible sheet.

Clang, Ltd. **C210**
Crown Yard, Cricklewood, London, N.W.2.

MANUFACTURERS of high - quality electrical accessories, the company will be showing a wide range of equipment utilizing plastic materials.

Desoutter Brothers, Ltd. **C412**
The Hyde, Hendon, London, N.W.9.

WELL known for its wide range of tools, the company will be showing examples of portable electrical and pneumatic straight drills, screw-drivers, nutrunners, nibblers, grinders and other industrial equipment.

Ether, Ltd. **C700**
Tyburn Road, Erdington, Birmingham, 24.

A COMPLETE range of instruments specially designed for the control of temperatures in the plastics industry will be shown. These include the Ether-Wheelco electronic temperature controller Capacitrol and Surface contact temperature measuring instruments. Also shown will be a full range of edgewise temperature indicators.

B. I. F. SECTION

General Electric Co., Ltd. **C503/502**
Magnet House, Kingsway, London, W.C.2.

AT Witton G.E.C. operate a very large moulding works, which supplies mainly the requirements of the company in the electrical field. The company also moulds for the trade, and examples of this work will be shown.

Ioco Ltd. **C416**
Anniesland, Glasgow, W.3.

THIS company's exhibits will feature particularly laminated plastics in paper and fabric base sheets, rods, tubes, bearings and gears. Also shown will be p.v.c. leathercloths, plasticproof materials and varnished electrical insulating cloths and tapes with various bases including polythene.

Langley London, Ltd. **C226**
Kelvin Way, Crawley, Sussex.

ELECTRICAL insulating materials to be displayed include natural mica processed in all shapes and forms for all branches of the electrical industry. Samples of laminated plastic materials in tube and sheet form and also in processed and fabricated parts as used by industry will be shown. The laminates made by the company are of paper, fabric, glass and asbestos bonded with various resins such as phenolic, melamine and silicones.

C. and C. Marshall, Ltd. **C712**
Oakleigh Road North, London, N.20.

THE company has specialized in the field of thermoplastic extrusion, and its products are widely used in the electrical and automobile industries, and for many other industrial applications. A range of typical extrusions will be shown in various materials.

National Plastics (Sales), Ltd. **C614**
Walthamstow Avenue, London, E.4.

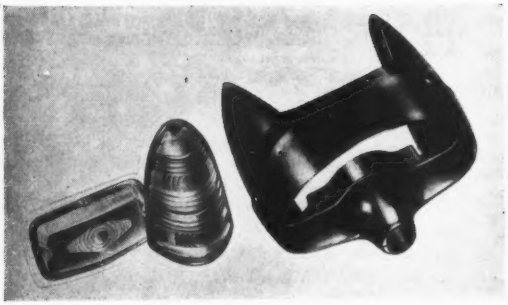
SPECIALISTS in the moulding field, the company, which is the sales organization for British Moulded Plastics, Ltd., and Moulded Products, Ltd., will feature a wide selection of electrical components and also a large television cabinet, all moulded from phenolic materials. In the thermoplastic range, the Solo solder gun will be shown, housed in polystyrene mouldings, and made for Budd and Weston (Special Machines), Ltd. Also on display will be many kinds of doors and trays for refrigerators and some small radio cabinets, made from shock-resisting polystyrene, and battery boxes made from bituminous materials and hard rubber. Mouldings in nylon, including speedometer drive gears for the Standard Vanguard and lamp covers in polystyrene for the Ford Anglia and Prefect cars, will also be seen.

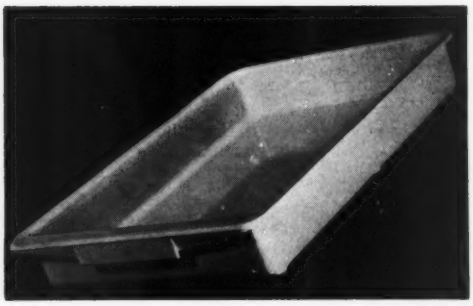
Permali, Ltd. **C618**
125 Bristol Road, Gloucester.

INSULATING materials, silent gears, textile accessories, insulators and tubes will be some of the many exhibits shown by this company.

Phipps Plastic Products, Ltd. **C.713**
244 Bromford Lane, West Bromwich, Staffs.

AS fabricators of thermoplastics sheet materials such as Perspex, the company produce diffusers and deflectors for





(Left) Mouldings for Ford Anglia and Prefect cars, by British Moulded Plastics Ltd. Instrument cluster in phenolic material. Two lamp covers in Diakon material. (Right) Refrigerator tray in white polystyrene by British Moulded Plastics Ltd.

fluorescent lighting fittings, a range of "Dome" food covers, and trays as well as making machine guards, motorcycle windscreen panels, roof lights for buildings and other mouldings, pressings, blowings and machined parts.

Rapid Magnetic Machines, Ltd. **C421**
Lombard Street, Birmingham, 12.

MANUFACTURERS of permanent and electro magnetic equipment, the company's exhibit will include lifting magnetics, clutches and brakes, percolators and magnetic filters of various kinds.

Telegraph Construction and Maintenance Co., Ltd. **C216**
23 Old Broad Street, London, E.C.2.

THE company makes use of plastics materials in the cable-covering field. In addition custom moulding is carried out, and the extrusion of Telcothene. Telcothene is also supplied as powder for coating purposes.

Tufnol, Ltd. **C613/512**
Perry Barr, Birmingham, 22B.

TUFNOL laminates will be displayed in the form of sheet, tube and rod together with examples of engineering components produced from these basic shapes. These include gear wheels, bearings, electrical insulators, aircraft, and motor vehicle parts and marine fittings.

Of special interest are water-lubricated bearings and slipper pads for rolling mills, gears ranging from small sizes for instruments such as a Cardiograph, which records

Terminal board 3 ft. long, fabricated from Kite brand Tufnol sheet and tube.

human heart beats employing a delicate clock movement with Tufnol gear wheels, to larger gears for textile machinery. Fabric base brands comply with B.S.972:1941 and more than satisfy requirements of B.S.668:1936.

"Kite" brand Tufnol sheet is used when a combination of electrical and mechanical properties is required. This complies with B.S.2076:1954 and B.S.1137:1949. Tubes of the same material comply with B.S.1314 type A:1946.

United Ebonite and Lorival, Ltd. **C301**
Little Lever, Nr. Bolton, Lancs.

ORIGINALLY concerned with ebonite and hard rubber fabrications, the company now carries out a wide range of injection mouldings for industrial applications and the fabrication of p.v.c. sheeting. In addition, examples will be shown of extrusions for electrical, chemical, insulation and packaging applications.

Wilmot Breeden, Ltd. **C302**
Amington Road, Birmingham, 25.

THE company's exhibits will be divided into two main groups, domestic appliances and equipment and three dimensional badges. The first-named will be largely items produced for refrigerators, including compartment doors, control knobs, escutcheons and shelf supports.

A very large assortment of three dimensional badges will be on display, the majority at the moment being used in refrigerators and washing machines.

Wolf Electric Tools, Ltd. **C603/502**
Hanger Lane, Ealing, London, W.5.

AMONGST newcomers to the range of Wolf Electric Tools is the 3-in. portable electric belt sander, BS3. Two models

Wolf drill and stand with machine vice in position.

of electric saws are featured as well as the Wolf combined mortiser and drill, type CM4, which can be converted to a bench drill press or ⅜-in. portable heavy-duty drill.

GROUP D
Engineering

A.E.R. (1938), Ltd. **D720**
196 Great Cambridge Road, Enfield, Middlesex.

EXAMPLES will be shown of the metallizing process, demonstrating the finish which is possible on plastics materials to give imitation jewellery, cosmetic bottles and other decorative units.

Airscrew Co. and Jicwood, Ltd. **D726**
Weybridge, Surrey.

USING laminated and resin impregnated wood, the company manufacture many industrial components, including cooling tower fans and flooring and wall-board materials.

George H. Alexander Machinery, Ltd. **D632**
82-84 Coleshill Street, Birmingham, 4.

MANUFACTURERS and importers of machinery, tools and supplies, the company's exhibit will include a complete range of AB honing equipment, some designed for the American market. Also on display will be a sheet-metal testing machine, including a new range of auxiliary tubes for deep drawing tests, the Rockwell hardness tester and various optical measuring instruments.

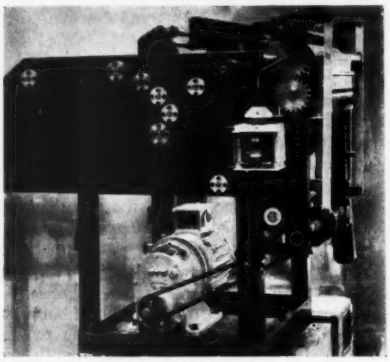
Allspeeds, Ltd. **D257**
Clayton-le-Moors, Nr. Accrington, Lancs.

THE Kopp speed variator will again be shown this year. Examples will be on view of various applications of the unit. One shows the variator as the prime mover in the synchronization of the sealing and cutting of polythene bags on an A. H. Bland (Engineers), Ltd., machine.

George Angus and Co., Ltd. **D711**
Angus House, Newcastle upon Tyne, 1.

MANUFACTURERS of fluid seal products, fabricated from the Gaco range of oil- and heat-resisting synthetic rubbers, the company will show examples of the applications of these products. Seals are available for shaft diameters from 8 in. to 48 in., some of them specially designed for rolling mill applications. The robust construction of these seals makes them particularly suitable for this purpose.

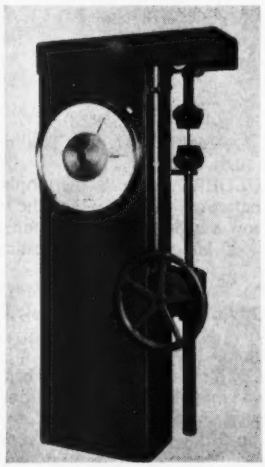
The company also moulds with fluorocarbon plastics, such as p.t.f.e., in the manufacture of gaskets and simple mouldings. The p.t.f.e. type is also available for the insulation of electric cables.



Allspeeds Ltd. Kopp variator installed on sealing machine.

W. and T. Avery, Ltd. **D523/420**
Soho Foundry, Birmingham, 40.

THE new feature at the exhibition will be the 6105CCG tensile testing machine, designed to operate up to 2,500 lb. The machine is compactly constructed in a single unit, is extremely versatile, and can be used for testing a very wide range of materials, including plastics. A recording device can



Avery tensile tester.

be fitted for users who need an autographic record of load extension characteristics. The strain is applied by a hand-operated worm and screw gearing of extremely high efficiency. Special grips are supplied for the testing of rubber and plastics.

British Ermeto Corporation, Ltd. **D723**
Hargrave Road, Maidenhead, Berks.

THIS company will again be displaying examples of pipe couplings, and valves which have been specially designed to withstand high industrial pressures, even under conditions of extreme vibration.

British Ropes, Ltd. **D349/244**
Carr Hill, Doncaster.

ONE of the major products of this company is nylon, demonstrated on the stand by a number of light engineering components moulded from this material. One interesting exhibit will be a collet used in bottle-washing machines, handling several thousand bottles per hour. The collet acts as a cushion for the bottle and prevents breakage at the high speed of operation of the equipment. A further advantage is the resistance of nylon to dilute alkalis frequently used in such machines.

Nylon bearings and washers will be on view, such as those used in Prestige food mixers, in electric motors and wringers, and a wide range of domestic and industrial equipment where lubrication is impossible or inadvisable. Beakers and drinking mugs will also be shown.

British Ropes will also be showing fabrics made from nylon and Terylene fibres in a wide range of applications, including protective head gear, overalls, chemical filters and sail cloth.

W. Canning and Co., Ltd. **D207/108 and D209/110**
Great Hampton Street, Birmingham, 18.

THIS company specializes in the manufacture of polishing and plating equipment and materials for the finishing of metal and plastics.

Richard W. Carr and Co., Ltd. **D234**
Wadsley Bridge, Sheffield, 6.

MANUFACTURERS of tool steels and certain tools, the company will be showing materials suitable for the fabrication of dies for plastics moulding and extrusion.

Christy and Norris, Ltd. **D403**
Broomfield Road, Chelmsford, Essex.

MANUFACTURING disintegrators, pulverizers and hammer mills, the company will be showing examples of its machinery. Much of this equipment is used in the plastics industry for disintegrating and grinding various materials.

Colour Sprays, Ltd. **D600**
64 Heath Street, London, N.W.3.

THIS company has long specialized in the manufacture of special equipment for the spray silvering of plastics. This year's exhibit will demonstrate the wide range of plant that is available, including air compressor plant. Spray units range from the small artist's air brush, which is suitable for photographic work, to the larger units used in motorcar bodies, electric cookers, fires, etc.

Croda, Ltd. **D220**
Snaith, Goole, Yorkshire.

ONE of the features of this company's stand will be Crocell, a strippable plastic coating, impervious to corrosive conditions and affording excellent protection from knocks and abrasion during storage. The skin is easily removed by splitting open, leaving a film of lubricating oil, exuded by the cover during storage. The material is thermoplastic in nature and can therefore be applied without difficulty.

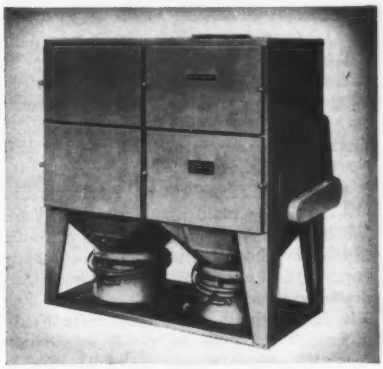
The company will also be showing rust preventatives, which can be used to remove rust of various kinds.

Dallow Lambert and Co., Ltd. **D427/326**
Spalding Street, Leicester.

EXHIBITED for the first time will be the new Auto-Shaker, shown in operation in conjunction with a Dustmaster dust collector. The device consists of a slow-speed geared

B. I. F. SECTION

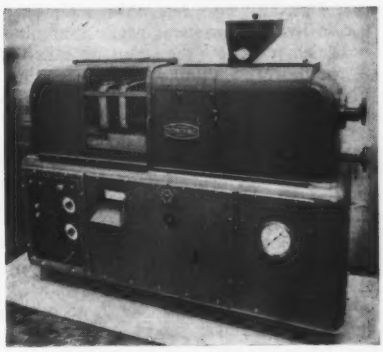
motor and the necessary control gear, which is interlocked with the fan motor. Also on display will be a pneumatic conveying plant and the new Multiswirl, the latest development in wet collectors. Equipment is available for the collection of dust in all industries, including plastics.



Dallow Lambert Auto-shaker

Dowding and Doll, Ltd. **D537/434**
346 Kensington High Street, London, W.14.

THREE machines will constitute the principal exhibit of interest to the plastics industry; the Dowding automatic fast-cycling injection-moulding machine, the Lester ½-4-ounce injection-moulding machine, and the Westminster power-operated injection-moulding machine. This latter has a heater



Dowding fast-cycling machine.

consumption from 350-500 watts, a total injection pressure of 8,750 lb., and platens of working area of 31 sq. in. The Lester 4-ounce machine is operated by a 10 h.p. motor, with a maximum cycle per hour (idling) of 600.

Empire Plastics (Birmingham), Ltd. **D768**
Empire Works, Brueton Street, Birmingham, 4.

THE company will be showing a variety of mouldings carried out for the trade, including bottle caps, knobs and handles.

Engis, Ltd. **D217**
25 Victoria Street, London, S.W.1.

HYPREZ diamond compounds are now widely used in the plastics industry for the finishing of moulds. The elimination of

B. I. F. SECTION

scratches is claimed to be complete and a number of moulds will be on show. Also shown is the Hyprez diamond compound lapping kit, specially prepared for small manufacturers and marketed at a very low price.

J. H. Fenner and Co., Ltd. **D406**
Marfleet, Hull.

A LARGE range of industrial belting including variable speed belting and V-belts will be shown as well as Fenaplast flame-resistant colliery conveyor belting.

Fescol, Ltd. **D529**
North Road, London, N.7.

MANUFACTURERS of electrochemical deposition plant, the company's display will be particularly devoted to end products which have been serviced by the company's apparatus. One example will be a large drying cylinder, 4 ft. in diameter by 11 ft. 3 in. in length which has been Fescolised in nickel. The process is widely employed in reconditioning hydraulic rams of moulding presses.

Finney Presses, Ltd. **D241**
Berkley Street, Birmingham, 1.

THE emphasis this year will be on the Greer-Mercier hydro-pneumatic accumulator, manufactured under licence by Finney Presses, Ltd., who are now producing a complete range from 10-cu.-in. to 8-gallon capacity. Two working applications of the accumulator are being shown, the principal being in the new portable Finney hydraulic power pack, which has been designed for use in hydraulic systems where intermittent peak demands from the pump are called for. A small working unit will be operating a Finney 100/120-ton down-stroking press, suitable for general plastics moulding.

The press, which is of the improved Finney type, is fitted with prefilling equipment, moving platens being turned by side rams. Ejectors are also fitted, together with automatic stroke adjustment for the main ram.

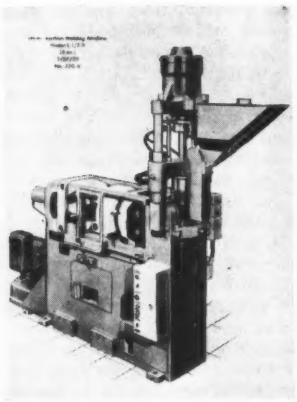
Also shown will be a working exhibit demonstrating the important application of the Greer-Mercier accumulator when used as a pulsation dampener or shock absorber in hydraulic systems.

Firth-Vickers Stainless Steels, Ltd. **D419/318**
Staybrite Works, Sheffield, 9.

THIS stand will be devoted to a range of Staybrite stainless steels and grip-resisting steels, in the form of strip, bar and precision castings. The company produces a range of steels for plastics moulding tools and dies.

Foundry Equipment, Ltd. **D301/200**
Linslade Works, Leighton Buzzard, Beds.

MANUFACTURERS of plant of various kinds for use in foundries, the company will be showing a semi-automatic shell-moulding machine, which comprises a process calling for the use of synthetic resins. The company also makes sand conditioning and distribution plant, and pneumatic moulding machines.



4-oz. Lester injection machine shown by Dowding and Doll Ltd.

Grist Plastics, Ltd. **D720**
82-84 Brighton Road, Surbiton, Surrey.

INQUIRIES will be answered on, and examples will be shown of, thermoplastic materials manufactured by the company.

Hall and Hall, Ltd. **D729**
Oldfield Works, Hampton, Middlesex.

THIS company's stand will include a very comprehensive range of steam and hydraulic jointings and packings. Also shown will be a range of Hallprene synthetic rubber mouldings, sheetings, extrusions and oil seals, and various types of asbestos insulating materials.

Alfred Herbert, Ltd. **D310/321**
Coventry.

MANUFACTURERS of measuring instruments, pulverizing units, and much other equipment, the company will be showing examples of its products.

E. C. Hopkins, Ltd. **D741**
Grosvenor Street West, Birmingham, 16.

THIS company manufactures an extensive range of equipment for use in tool making and machine construction. Examples will be shown of bench tool grinders, hand screwing machines, flexible shafts for all purposes and polishing machines.

Hordern-Richmond (Sales), Ltd. **D302**
Hydulignum Works, Haddenham, Bucks.

THIS company has specialized in the manufacture of jigs and tools from Hy-du-lignum, and its products find application in a wide range of industries. The display will include examples of these fabrications, together with examples of glass laminate mouldings, and drill, trim and assembly jigs.

Imperial Chemical Industries, Ltd. **D619**
Plastics Division, Welwyn Garden City, Herts.

THE stand at this exhibition is devoted to the uses being found for their thermoplastics and thermosetting materials in the engineering industry. A good deal of prominence will be given to polytetrafluoroethylene, which is now being produced on a commercial scale in the U.K. and is available in quantity for use in the electrical and engineering industries and for specialized applications, such as covering rollers in the bakery and allied industries to prevent sticking.

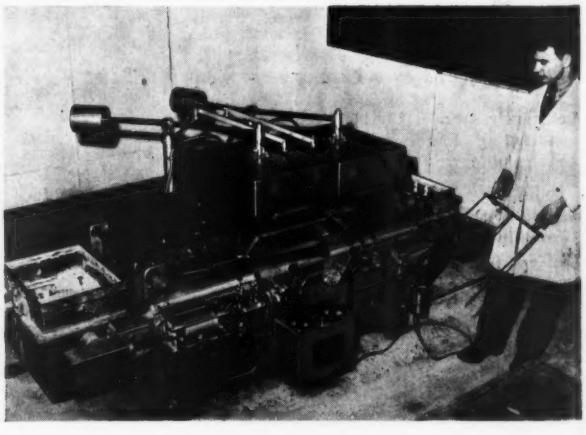
Another I.C.I. product singled out for special attention is nylon moulding powder which is now being used for small precision engineering components, such as gear wheels, bearings, rings, etc. Nylon mouldings are exceptionally tough and possess valuable self-lubricating properties that are of special value for bearings. "Diakon," the acrylic thermoplastic moulding powder, will be shown alongside some of the more ambitious of the mouldings produced from it. Other products to be shown include "Darvic" rigid p.v.c., the non-inflammable thermoplastic sheeting now produced in a wide range of attractive colours, "Perspex" acrylic sheet, rod and tube and corrugated "Perspex." The last-named is available in most standard profiles and in the form of curved corrugated sheets for flat roofs.

London Moulders (Plastics), Ltd. **D528**
364/6 Buckingham Avenue, Trading Estate, Slough, Bucks.

MOULDERS of both thermoplastic and thermosetting materials, the company will show a wide range of components for a variety of industrial and domestic applications.

John Mills and Co. (Llanidloes), Ltd. **D337**
Llanidloes, Montgomeryshire.

THE Mills "Oilaulic" 3-ton bench press, also manufactured in 6- and 12-ton capacities, is intended for various applications in fitting and assembly shops. Other machines include hydraulic presses of



S.P.10 Semi-automatic shell moulding machine. Average production of shells is 20 per station per hour.

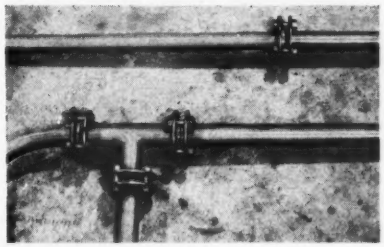
capacities of 15 tons, 54 tons, 60 tons and 100 tons. All models are entirely self-contained each being complete with "Oilaulic" pump, electrical equipment and drying arrangements, pressure gauge for indicating loads, hand and foot control. The presses are designed principally for general engineering works.

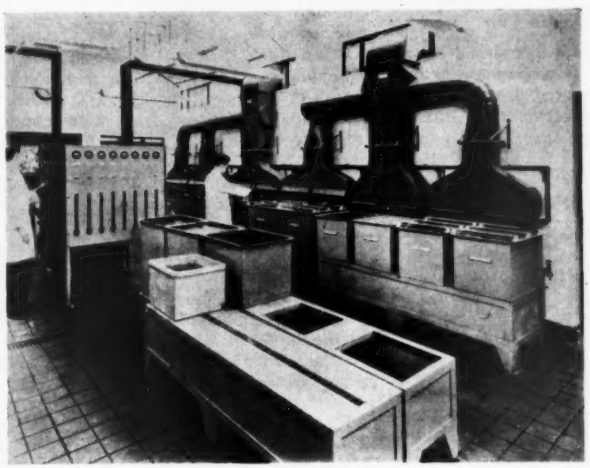
Plastic Engineers, Ltd. **D722**
Treforest, Glamorgan.

A SPECIAL feature of this stand will be a range of Nymol precision engineering components in nylon, including bearings, oil seals, textile machinery parts, washers, valves and gears. Working models and units incorporating nylon parts will be shown. A range of Alkathene stoppers are used with laboratory measuring cylinders and flasks. Various containers are moulded in polystyrene.

Press Guards, Ltd. **D601**
372-8 Farm Street, Hockley, Birmingham, 19.

AS the company's name implies, its business is to manufacture guards of various kinds, of particular importance in the plastics industry. Examples will be shown of automatic, interlocking, electronic and fixed types, together with machine arresting devices.





(Above and left) Examples of work carried out by Prodorite Ltd. in the anti-corrosion field. Shown are examples of pipes and tanks.

B. I. F. SECTION

Prodorite, Ltd. **D431**
Leabrook, Wednesbury, Staffordshire.

WELL known in industry as acid proving specialists, the company will show a comprehensive range of materials and constructions being used in the field of corrosion. In addition to examples of acid resisting flooring and tank constructions, the stand will also include a number of corrosion-resistant coatings applicable to steel and concrete. Also shown will be examples of Vyken rigid p.v.c. piping and p.v.c. and polythene fabrications for fuel ducting and tank lining. Fibreglass tanks will also be shown.

Turner Brothers (Birmingham), Ltd. **D512**
Cliveland Street, Birmingham, 19.

MANUFACTURERS of special purpose machines, power presses, moulds and dies and jigs and fixtures, the company will exhibit mouldings which have been fabricated from its products. Power presses of 6-7 ton capacity will also be shown.

J. P. Udal, Ltd. **D606**
Court Road, Birmingham, 12.

NEW developments shown on the stand this year, include an automatic loading and unloading device. An automatic transfer feed will be shown in working conditions, feeding at the rate of approximately 50 pieces per minute. The well known "Fastrip" type guard for power presses will also be shown, incorporating arrestor mechanism to give early guard opening, this again giving high production rates with a high safety factor.

EARLS COURT

Several important plastics companies are exhibiting in various sections at Earls Court. B.X. Plastics Ltd. and Storeys of Lancaster are in the textile section. Modo Ltd., James North (Export) Ltd. and Plysu Products Ltd. are showing in the clothing section.

B.X. Plastics, Ltd. **EC-Q63**
Higham Station Avenue, London, E.4.

THE company's stand this year will be devoted entirely to the display of various applications of Velbex, p.v.c. sheet material which is now being widely used in textiles and soft furnishings. The sheet is available in plain and printed texturized finishes and in a wide variety of thicknesses and colours. Having many advantages over natural fibres for certain applications, the material is mothproof, is non-absorbent and does not require ironing.

H. R. Denne. **EC-Q58**
30 Whitepost Lane, London, E.9.

THE company manufactures a popular range of collars, of the semi-stiff type, fabricated from p.v.c. An illustration of these productions appears on this page. These will be displayed, together with other examples of the company's work, which includes stiff collars, cuffs, belts and ties. They are used extensively by clerical, nursing and uniformed staff, as well as the layman.

Car flooring by Hardura Ltd.

Hardura, Ltd. **EC-W10**
Great Harwood, Lancs.

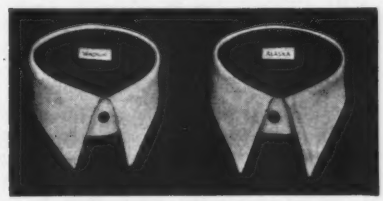
MANUFACTURERS of coated felt, floor coverings and insulations, Hardura is used in the motor industry, aircraft, in ships, in the home, and by public building contractors. Having a p.v.c. surface bonded to a felt base, the material is available in a wide range of patterns and colours, and offers an excellent floor covering where hard wear is experienced.

Modo, Ltd. **EC-Q99**
Inverkeithing, Fife.

THE main feature of this company's display will be raincoats, capes and aprons fabricated from thermoplastics sheet.

James North (Export), Ltd. **EC-Q14**
Tottenham Court Road, London, W.1.

INDUSTRIAL safety products are the principal concern of this organization and on display will be many kinds of gloves and



Semi-stiff collars from p.v.c., manufactured by H. R. Denne.

B. I. F. SECTION

mitts fabricated from p.v.c. by the dipping technique. Having closely knitted fabric lines, these gloves are seamless, highly resistant to abrasion and afford excellent resistance against most chemicals. P.v.c.-fabric-supported garments have been made up into complete outfits of protective clothing. As an addition to this field, heavy duty clothing is marketed for arduous conditions encountered by outdoor workers, particularly in such industries as fishing.

Plysu Products, Ltd. **EC-Q69**
Woburn Sands, Bletchley, Bucks.

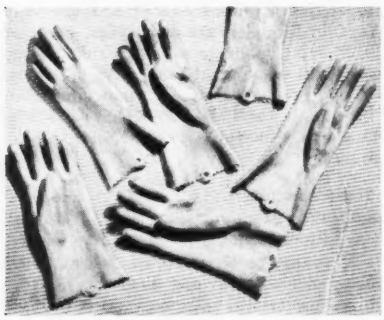
THIS company specializes in the fabrication of thermoplastics materials by the high-frequency welding technique. Products include a complete range of industrial protective clothing, safety components, drum and tank linings, and oxygen tents. The company's stand will feature various kinds of p.v.c. machinery covers, aprons, flexible gaiters and hand savers.

Storeys of Lancaster. **EC-Q26/57**
Whitecross Mills, Lancaster.

THE products of this company are principally in the field of fabrics, many involving the use of p.v.c. The use of high-quality printing techniques has placed these plastics fabrics in the forefront insofar as design is concerned, and the display at the exhibition this year will demonstrate many of the new patterns which have been devised.

The company has also produced thin sheeting of various textures, with effects such as seersucker or poplin weave.

(Above) Manufactured by Plysu Products Ltd., one of these domestic mops has a polystyrene head for lightness.



(Above) Fabric supported p.v.c. gloves in pastel blue for domestic use, made by James North (Export) Ltd.

Also on display will be "Norzon," a material which is produced by the electrostatic deposition of a specially manufactured flock on to a rubber-composition-coated textile fabric. The product is superior to suedeen or suedette in many ways, particularly with regard to abrasion resistance, fastness to light and fastness to bleeding in water. "Norzon" has application in the manufacture of footwear, golf jackets, handbags and book binding.

OLYMPIA

A number of important plastics companies are exhibiting at Olympia, and many new products will be on display.

Aberdeen Combworks Co., Ltd. **O-M52**
Hutcheon Street, Aberdeen.

THE main exhibits this year will be combs in a variety of plastics materials, nylon, cellulose acetate and polystyrene. Also on show will be trinket boxes, tiles and an egg container.

The Chad Valley Group **O-P101**
Harborne, Birmingham. 17.

THIS company has for many years made use of considerable quantities of plastics materials. Amongst the exhibits to be shown will be chessmen, dominoes, draughtsmen and other games, employing units moulded from plastics.

Combex, Ltd. **O-P83**
Ganton Street, London, W.1.

MOULDERS of plastics materials, the company will be showing toys, novelties of various kinds, brooches and other articles of personal adornment fabricated from thermoplastics materials.

P. B. Cow and Co., Ltd. **O-O4**
12 Hay Hill, Berkeley Square, London, W.1.

THE company will be displaying a complete range of domestic sundries, rainwear, beach balls and other articles fabricated from plastic sheet, principally p.v.c. domestic uses and rainwear. Embossed and supported sheet for general upholstery will also be shown.

Dunlop Special Products, Ltd. (Plastics Division) **O-Q33/49**
Fort Dunlop, Erdington, Birmingham, 24.

THE principal display on this stand will be p.v.c. sheeting, plain, printed, embossed and laminated for curtaining, other including linoleum, hard wooden blocks and deal floor boards. Crazing and chipping has been entirely overcome and the material is being exported in large quantities to Australia where it is particularly popular in the treatment of linoleum.

Floor Treatments, Ltd. **O-E15**
Copyground Lane, High Wycombe, Bucks.

A FEATURE of this company's products is a synthetic floor dressing, delivered as two parts, one is a resin, the other the accelerator. The dressing has been successfully applied to various kinds of flooring

Boardroom floor of C. A. Parsons & Co., Ltd., processed by Floor Treatments Ltd.

Grist Plastics, Ltd. **O-E2/3**
82-84 Brighton Road, Surbiton, Surrey.

THE company manufactures thermosetting moulding powders and thermoplastic materials of various kinds and examples will be shown on the stand.

E. R. Holloway, Ltd. **O-M38**
28 Hydeway, Welwyn Garden City, Herts.

THE principal manufacture of this company is combs, shown in a variety of materials, including cellulose acetate and nylon. Also on display will be articles for the seaside trade, sun glasses, wallets and note cases.

Jarrett, Rainsford and Laughton, Ltd. **O-M62**
Warstock Road, Birmingham, 14.

MANUFACTURERS of hard haberdashery and fancy goods, this company will be showing examples of Twinco plastics houseware, which ranges from polythene table mats to polystyrene kitchen canisters. Baby and picnic plates are manufactured together with a standard range of cups, saucers and plates. Other articles fabricated by the company from plastics are soap boxes, toothbrush holders, clothes hangers and jam-jar covers.

Loma Electronic Equipment, Ltd. **O-B27**
27-29 Union Street, London, S.E.1.

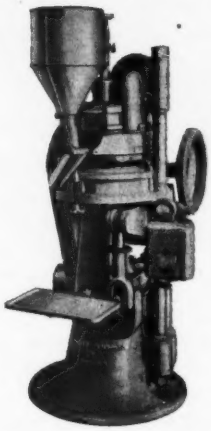
SPECIALIZING in industrial metal detection, the company will be featuring the Metaltector, the unit which provides completely automatic inspection in the detection of metal in any non-metallic material. Special ejection systems can be fitted so that contaminated products can be diverted without stopping production.

Manesty Machines, Ltd. **O-F1**
Speke, Liverpool, 19.

THIS company's products are well known in the chemical and plastics industries.

B. I. F. SECTION

A special feature is tabletting machines used extensively in the moulding of thermo-setting materials. The Manesty cone mill is used for reducing rejected pellets and hard flash; it is easily adjusted for granule size and is fitted with steel cut gears.



Manesty tabletting machine.

Mendle Brothers, Ltd. **O-M34**
Pontygwaith, Rhondda, Glamorgan.

FOR many years this company has specialized in the manufacture of household articles and fancy goods from plastics materials. A number of new fabrications will be displayed this year including a nylon stocking washer, a polystyrene crumb set, a polystyrene egg timer and such units as a polythene lemon squeezer, soap dishes and mixing bowls.

E. M. Napier, Ltd. **O-P87**
530-34 Kingsland Road, London, E.8.

MANUFACTURERS of toys of all descriptions, the company will be showing examples of plastics fabrications in this field.

Newey Brothers, Ltd. **O-M107**
Summer Lane, Birmingham, 19.

THIS company specializes in fasteners and containers. As such they make use of p.v.c. in such items as hair curlers, and cellulose acetate in boxes of various kinds.

Optima Manufacturing Co., Ltd. **O-K115**
17 Drummond Street, London, N.W.1.

THIS company specializes, so far as the plastics industry is concerned, in the manufacture of a variety of picnic ware, equipped with plastics fitments. These units include sandwich cases, vacuum flasks and cups and saucers.

Kitchen canisters, moulded in transparent polystyrene, by Garrett, Rainsford and Laughton, Ltd.

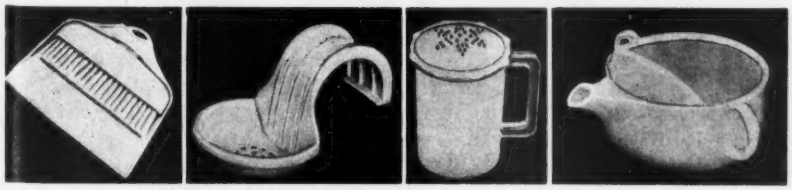
Progressive Inventions, Ltd. **O-M4**
16 King Street, Market Rasen, Lincolnshire.

SPECIALIZING in the manufacture of plastics containers, caskets and other packaging units, the company will be displaying examples of its latest products moulded from plastics materials.

A range of Coronation beakers, decorated by transfers manufactured by Studio Sprinzel, Ltd. Examples of new ranges will be on display.

Stokes Fountains, Ltd. **O-M6**
185-187 London Road, Croydon, Surrey.

PERSPEX is used by this company in the manufacture of a specialized range of decorative units. Fountains will be on display suitable for use in gardens and in the home and also as decorative and display features in stores, restaurants and hotels.



Domestic articles moulded from plastics by Mendle Brothers Ltd.

Studio Sprinzel, Ltd. **O-F7**
Golders Green, London, N.W.11.

THE company will be showing transfers of all kinds suitable for use with plastics. These transfers were widely used in the decoration of plastic beakers for the Coronation.

Taylor, Lowe and Co., Ltd. **O-M42**
Tala Works, Stourbridge, Worcs.

ON display will be examples of this company's fabrications for the houseware, stationers and chemists trade.

Tedson, Thornley and Co., Ltd. **O-M17**
Robert Street Mills, Rochdale, Lancs.

THE company specializes in the manufacture of industrial and protective gloves, and examples will be on display of a range manufactured from p.v.c.

D. G. Todd and Co., Ltd. **O-P60**
Tulketh Street, Southport, Lancs.

THIS company specializes in the manufacture of plastics dolls, toys, toilet goods and injection mouldings. A special feature will be the Roddy range of plastic dolls and toys.

Tresco Plastics, Ltd. **O-P58**
Earls Barton, Northants.

ON display will be examples of educational, water, and constructional toys fabricated from plastics.

George Vokes (Engineering Division), Ltd. **O-H18**
90 Wardour Street, London, W.1.

THE company manufactures infra-red drying and heating equipment for the plastics industry. Examples of other equipment used by the industry will also be shown.

Zell-Em, Ltd. **O-M71**
Wren Grove, Blackpool, Lancs.

THE principal plastic material employed by this company in the manufacture of a wide range of motorists' accessories, display emblems and figures, is p.v.c. The company has employed an important feature of the material, the adhesiveness of p.v.c. and this year's display will feature a number of examples of this kind of work.

LETTERS TO THE EDITOR

Correspondents are reminded that a stamped and addressed envelope should be enclosed in all cases where a personal answer is desired. It is understood that any letter received may be published at the discretion of the Editor.

P.V.C. Tape

SIR,—The first paragraph in "Talking Shop," *Plastics*, March, page 92, refers to mending p.v.c. sheets. We are manufacturers of self-adhesive p.v.c. tape in various colours. As yet, we have not produced a transparent one, but where coloured plastic p.v.c. coats, etc., are at issue our coloured tapes might meet the need. At the present, in some colours we have the mass the same colour as the p.v.c. film, in others a white mass is attached.

DALMAS LTD.

Junior Street,
Leicester.

SIR,—We have read with interest the remarks in your March issue regarding the problem of mending small tears in p.v.c. rainwear. Whilst you may be correct in that suitable self-adhesive tape is not generally available, we would make it quite clear that this is on no account due to scarcity of the p.v.c. backing material. We are regularly supplying transparent prestretched p.v.c. film which is the ideal material for this purpose.

LAWFER CHEMICAL CO. LTD.

27 Regent Street,
London, S.W.1.

Plastic Floor Tiles

SIR,—In the February, 1954, issue of *Plastics* reference was made to the new building belonging to the Plastics Division of I.C.I., Ltd., at Welwyn Garden City. In this article, mention was made of the floors being covered with plastic tiles. I would be pleased to have any information available, e.g., the cost, the manufacturer, size of tiles, colour range and whether they will withstand oil and grease. Possibly you cannot offer this information but no doubt you can advise me where it can be obtained. J. ROBERTSON.

22 Lord Lytton Avenue,
Coventry, Warwickshire.

Coating Materials

SIR,—Can you please tell me the name of a manufacturer of a coating material which appears to exude oil? This is employed for coating machine tools.

W. CANNING AND CO., LTD.

77 St. John Street,
London, E.C.1.

[EDITOR'S NOTE: Dipping compounds are made by R. A. Brand and Co., Ltd., Bridge Paper Mills, Holland Street, Pendleton, Manchester, 6; J. M. Steel and Co., Ltd., 36 Kingsway, London, W.C.2; Croda, Ltd., Croda Works, Rawcliffe Bridge, Goole, Yorkshire.]

Plastic Tumblers

SIR,—We enclose herewith a snapshot of a tumbler originally manufactured by the International Company, Clevedon, Ohio, U.S.A., and, we believe, is used on U.S. naval ships.

We are interested in obtaining supplies of this tumbler, which we believe to be of a moulded construction, having an appearance very similar to pressed glass. We are interested in these tumblers in 10 ounce and 20 ounce capacity for use in canteens on board H.M. ships. We presume that, in order to cover tooling costs, a minimum quantity of approxi-

Tumbler manufactured in U.S.A. for use in U.S. ships.

mately 25,000 would be required, and we confirm that we are prepared to place an order for this quantity, providing we can be satisfied that the type of plastic and the construction meet our requirements.

We shall be pleased if you will advise the names and addresses of manufacturers whom we could contact or to whom you could refer this particular matter in order that we may proceed with this inquiry.

NAVY, ARMY AND AIR FORCE INSTITUTES.

Kennington Lane,
London, S.W.11.

Plastic Bags

SIR,—We require plastic bags, made of a thin transparent material. Each bag, measuring 8 in. by 7 in., should be welded. Could you please give us the names and addresses of firms making such bags.

MENDLE BROTHERS, LTD.

Pontygwaith,
Rhondda, Glamorgan.

Plastic Car Bodies

SIR,—We are interested in the possibility of using plastic bodywork on a small car we are developing. We have no experience of this field and would be most grateful for any information you can give us as to what firms have specialized in structures of this type.

IOTA RACING CARS.

3 Alma Vale Road,
Clifton, Bristol, 8.

SIR,—I have recently written to the Editor of a technical paper about the rebuilding of the body of a car with fibreglass and a plastic. He was unable to assist me in this matter and has suggested that I should write to you to see if you could help me. R. W. G. SADLER.

33 Bayswater Road,
Melton Mowbray, Leicester.

Perspex Signs

SIR,—I am anxious to get in touch with the manufacturers of "King" Perspex signs and I should be most grateful if you would give me the address of the firm concerned.

ARTHUR ROBINSON.

Garston, Walshaw Avenue,
Colwyn Bay,
Denbighshire.

Side Combs

SIR,—From our customers in the Gold Coast we have received an export inquiry for a ladies' decorated plastic side comb. The comb is yellow, decorated only as far as shape is concerned and not by any jewellery or any other embellishment. We should like to find out who makes such a comb in the United Kingdom (the sample we have is stamped "British made"), and if you know, we would be much obliged by your informing us.

A. G. WILSS, LTD.

93 Copers Cope Road,
Beckenham, Kent.

Polythene as a Protective Coating

SIR,—Can you please advise me if there is a process available to industry that enables polythene to be applied to timber as a protective coating.

Would you please let me know the names and addresses of companies from whom technical information can be obtained upon this subject.

ALFRED DAVIDGE.

151 The Broadway,
Beddington, Croydon,
Surrey.

Folding hood with VYBAK Flexible rear window manufactured by Coventry Hood and Sidescreen Co., Ltd.

Fold the window with the hood!

This VYBAK development means that rear windows in automobile hoods may now be as large as comfort demands. VYBAK Flexible Clear Sheet folds back neatly as part of the hood—without any possibility of cracking or other damage. A larger rear window also means safer driving since more effective use can be made of the inside driving mirror.

For Sidescreens VYBAK Rigid Clear Sheet may be used. As well as giving excellent visibility, the material will keep its shape and dimensions, despite changes of temperature and humidity.

VYBAK Clear Sheet is strong, hard wearing, and will not easily discolour. It can be machined without special tools. Manufacturers and motor accessory dealers are invited to send for samples and further details.

VYBAK

REGD

Rigid and Flexible Sheet

Used in the Sunbeam-Alpine, Nash Metropolitan and M.G.

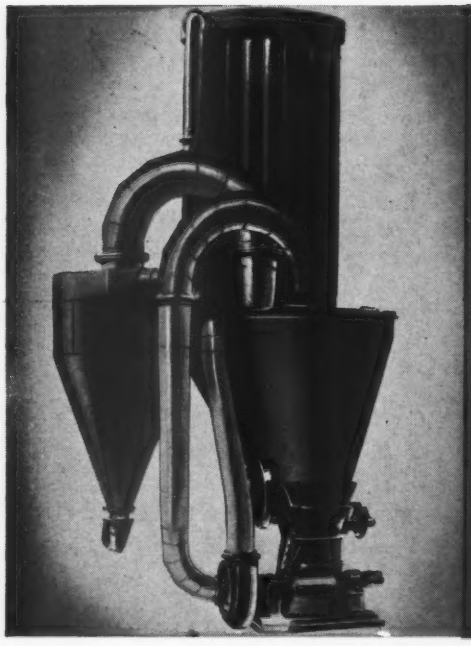
BAKELITE LIMITED · 12-13 GROSVENOR GARDENS · LONDON · SW1

RAYMOND

pulverising

for dustless production

and consistent fineness



- High-speed hammer mill, classifier and pneumatic conveyor in a compact unit plant.
- Combined air separating and conveying systems.
- Dust-free working ensured by vacuum operation.
- Designed for pulverising the softer, non-abrasive materials and for close control of fineness.
- Manufactured in a range of sizes.

ICI

INTERNATIONAL COMBUSTION PRODUCTS LIMITED

This company, formed on March 31st, 1954, now handles all equipment of the kind pictured for the International

London Office : Nineteen Woburn Place, W.C.1. Works: DERBY, ENGLAND: PORT ELIZABETH, SOUTH AFRICA: SYDNEY, AUSTRALIA.

World's Industry Employs Plastics

MATERIALS and TESTING

A fire - resistant polyester has been developed under the name of Hetron. With a small amount of antimony oxide good values for laminates have been obtained which make them an acceptable interior material under most building codes.
(*Materials and Methods*, 1954/Feb./98.)

A polyester resin with special chemical and heat-resistant properties is produced by General Electric Co., Pittsfield, Mass. U.S.A. It is used for exhaust ducting of chemical fumes, storing of chemicals, etc.
(*Machinery (New York)*, 1954/March/198.)

Silicone dielectric materials, are said to combine excellent insulating properties throughout a wide temperature range during long periods of time.
(*Product Engineering*, 1954/Feb./187.)

Raw material problems.—H. Meis gives a few examples to demonstrate the trend of development in raw materials necessary for the synthesis of plastics such as: coal tar, acetylene and crude oil by-products.
(*Kunststoffe*, 1954/Jan./6.)

Alpha-chloroacrylates. — K. Tessmar, shows that it is possible to produce "tailor-made" plastics by substitution and copolymerization processes. Special types of improved hardness, tensile and flexure strength can be developed; improved dimensional stability under heat can be obtained as well as the optical properties varied.
(*Kunststoffe*, 1954/Jan./9.)

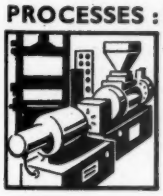
Tear phenomena of plastics.—Prof. H. Schardin reports on investigations by means of high-speed cinematography assisted by electrical measurements of tear speeds. He made a detailed investigation of the fracture surfaces. Ultrasonics were found useful as a standard for measurement.
(*Kunststoffe*, 1954/Feb./48.)

Plastic Foils.—A survey of the various types available and their production are given in a German technical magazine.
(*V.D.I.-Nachrichten*, 1954/Feb./1.)

Laminated fabric plastics.—A classification table with physical, mechanical and electrical properties including an identification scheme (DIN 7735) has been issued by the German Standards Institution. For instance Hgw 20825 means a phenol resin with cotton wool filler (Hgw), being a laminated material (2), made of phenol resin (o) with natural fibres (8) of fine thread (2) and for high electrical requirements (5). Another standard DIN 7736 gives the acceptance testing methods for these materials, the latter standard replaces DIN 57318.
(Beuth-Vertrieb G.m.b.H., Berlin, W.15.)

Glass fibre cushioning.—Resin-bonded glass fibre has excellent damping properties owing to the internal friction between the fibres. New applications therefore arise utilizing this property.
(*Product Engineering*, 1954/Feb./166.)

PROCESSES : MACHINERY



Extrusion of polyamides. — J. F. Kohlwey, Arnhem, describes the characteristic processing properties and examines the functional elements of the extruder. The high sheer effect of polyamides requires a special hopper design.
(*Kunststoffe*, 1954/Jan./3.)

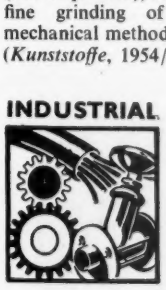
Rapid machining of plastic parts.—H. Chase describes a fixture for a drill press which faces, turns and reams a plastic cam. The special cutter contains five sintered carbide tools.
(*Machinery (New York)*, 1954/March/202.)

Design of injection moulds.—H. Gastrow continuing a series and discusses devices for cooling the moulds.
(*Kunststoffe*, 1954/Jan./33.)

Extruded glass plastics.—A new machine continuously produces any shape of fibre glass reinforced plastics. The "Glass-truder" is built by Hugh C. Marshall Co.
(*McGraw Hill Digest*, 1954/Feb./24.)

Crushing of plastics.—H. Rumpf describes a number of processes, such as granulation (not to powder), crushing of thermoplastics, fine grinding of polymers by various mechanical methods.
(*Kunststoffe*, 1954/Feb./43.)

INDUSTRIAL APPLICATIONS



Cellular Rubber.—G. R. Sprague and A. F. Sereque give a survey of the many varieties including cellular ebonite and polyvinyl chloride and show how many engineering problems, from shoe soles to head rests and from soft gaskets to hard life rafts can be solved by their use.
(*Mechanical Engineering*, 1954/Feb./147.)

High-vacuum applications of polythene.—J. F. Duncan and W. T. Warren of the Atomic Energy Research Establishment, Harwell, describe the fabrication of polythene vessels, valves, taps, fine control valves, manometers, etc. Polythene is also used for joining glass, metal, aluminium and other ceramics to high vacuum lines.
(*Brit. Journ. Appl. Physics*, 1954/Feb./66.)

Polyethylene insulated wire. — D. S. Rodbell and colleague made an investigation of an apparent anomaly in the electric strength of air about polyethylene-insulated wires under atmospheric conditions under direct voltages.
(*Journ. Electrochem. Soc.*, 1954/Feb./91.)

Electric accumulator construction.—W. Laeis gives a survey of injection-moulded polystyrol and polyamide components which, after initial difficulties, have been introduced for housings, stoppers, separators and other components.
(*Kunststoffe*, 1954/Jan./18.)

Plastics for ball-bearing cages.—The doctorate thesis of A. Gremer investigates the emergency running properties of plastics, in particular their suitability for ball-bearing cages.
(*V.D.I.-Zeits*, 1954/Jan. 11/63.)

Plastic moulded commutators.—The production processes developed by Hoover, Ltd., High Wycombe factory, using an impact extrusion technique, have been described in detail.
(*Machinery*, 1954/March 26/627.)

Plastics in the foundry.—G. Genin concludes his study and discusses the use of plastics for core making.
(*Revue Générale de Mechanique*, 1954/Jan./11.)

Epoxy resin primer, newly developed, is said to have high resistance to alkalis. It permits thinner film thickness and improves corrosion resistance three times.
(*Materials and Methods*, 1954/Feb./93.)

MISCELLANEOUS USES

Non-skid floors.—An abrasive - filled plastic coating for floors which can be brushed on like paint, but has a thickness 20× thicker than conventional two - coat paint has been developed by Colonial Refining and Chemical Co., Cleveland 14, Ohio.
(*Machinery (New York)*, 1954/March/199.)

Nylon wiper motor.—An American firm manufactures a compressed air windshield wiper motor for heavy trucks of nylon. Longer life with less maintenance is expected.
(*Materials and Methods*, 1953/Oct./132.)

Plastics envelopes for fruits.—F. Howard reports on American developments in the use of plastics envelopes for deep-cooled fruit concentrates.
(*Food (London)*, 1953/264/374.)

Plastic pipe research.—Battelle Memorial Institute has started an extensive engineering research programme sponsored by 29 firms in the Society of Plastics Industry. Plastic pipe sales for 1953 were expected to exceed $15 million compared with a $½ million market in 1948.
(*Mechanical Engineering*, 1954/Feb./151.)

Nylon air mail bags are undergoing final tests in the U.S. Post Office. It is estimated that $1 million will be saved by replacing cotton with nylon bags on air mail routes.
(*Textile World*, 1954/Jan./226. *McGraw Hill Digest*, 1954/March/22.)

New Productions

Electrical Instruments

The Link test power factor meter made by the General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2, has a plastic housing consisting of four mouldings. These are made in Bakelite X20 general purpose phenolic material. The tools for these mouldings were produced by a G.E.C. subsidiary, G.P.A. Tools and Gauges, Ltd., Harper Road, Wythenshawe, Manchester.

Safety Helmets

A sturdy lightweight safety helmet is produced by Orbex, Ltd., 15 Lime Bank Street, Manchester, 12, from rigid p.v.c. manufactured by I.C.I. (Plastics Division). These have been used in mines and general industrial uses in fields such as the chemical industry, quarries and steel erection. The final design is the result of 18 months experimental work by the company; it is manufactured to B.S.I. Specification and has been tested and approved by the Ministry of Fuel and Power.

Its greatest asset is resistance to water and chemicals. Traditional helmets used in mines are of paper pulp with a flanged surface. When this surface suffers from abrasion, resistance to water penetration is greatly reduced and the impact strength greatly lowered. In consequence the p.v.c. helmet shell is expected to have a working life at least three times greater than the fibre pulp helmet. The design is registered and is also the subject of a patent application, referring to the special features such as the integral lamp slot and the vent holes in raised flutes to prevent the entry of water and dust.

A motorcyclist's helmet is made of the same material though different in design. Helmets have been sent out in quantity to many areas all over the world and production is around 1,000 per week.

Transparent Drawer Cabinets

A range of "See-Thru" drawer cabinets, for small parts filing and storage in factories, offices, workshops and garages is being produced by General Industrial Company, 5738 N. Elston Avenue, Chicago, Illinois. Model J20 illustrated has twenty moulded crystal-clear plastic drawers measuring $5\frac{7}{8}$ in. by $2\frac{3}{4}$ in. by $1\frac{7}{16}$ in. each, housed in a welded all-steel cabinet. This cabinet, overall size $10\frac{1}{4}$ in. by $12\frac{1}{2}$ in. by 6 in., has an attractive silver grey hammer finish and clubbed feet. Adjustable drawer dividers and identification labels are included. Similar models are in production, ranging from eight to 128 drawer units.

Lettering and Number Plates

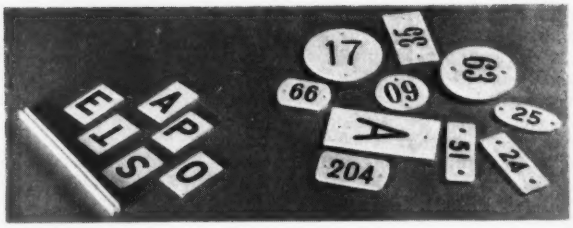
A range of display letters and number plates printed on various white opaque sheet materials is produced by W. G. Macnamara Ltd., Aldgate Works, Aston Brook Street, Birmingham, 6. The one-inch high letters shown on the left of the illustration are intended for making-up changeable signs and are supplied together with extruded cellulose acetate grooved railing between which individual letters are mounted. The dimensions of the letters are based on 1/10th in., i.e., 1/10th-in. face, 6/10th-in. high, 4/10th-in. wide (except "I," "M" and "W") on panels one-inch high and 6/10th-in. wide. The number tablets are intended for theatre seats, shelving, lockers and similar uses.

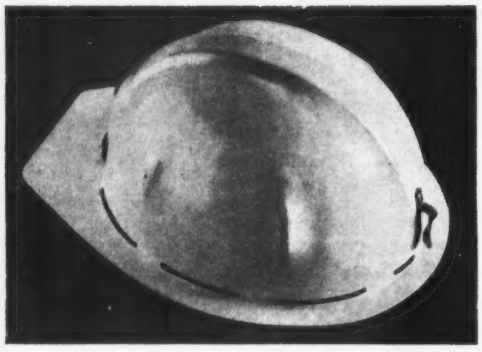
Household Protective Mittens

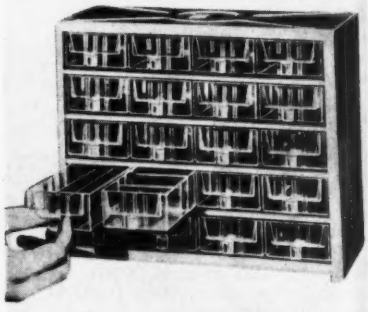
Translucent embossed p.v.c. sheeting in a laminated grade has been used by Plysu Products, Ltd., Woburn Sands, Bletchley, Bucks, for the manufacture of these radio-frequency welded mittens.

(Above)—Protective mittens.

(Right)—Letter and number plates.



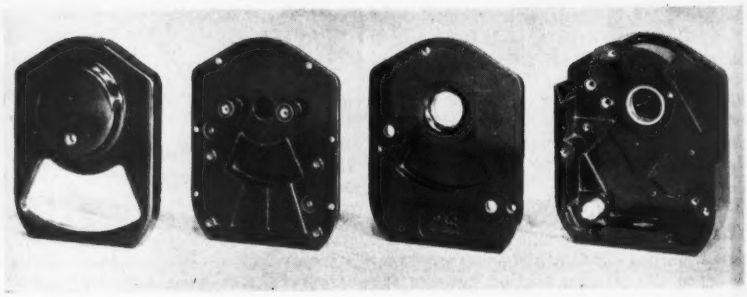




(Above centre)—Rigid p.v.c. safety helmet.

(Above, right)—Transparent plastic drawer units.

(Left)—G.E.C. test meter, and (right) the four mouldings forming the meter housing.



Plastics NEWS

Raw Materials, New Plant, Works Organization, Control Apparatus, Research, Personal and Trade Notes

MR. C. C. LAST, director and joint general manager of Bakelite Ltd., who was elected vice-chairman of the British Plastics Federation after the recent Annual General Meeting in London, has been closely connected with the Federation since its inception. Prior to the foundation of the Federation he was a member of the Council of the British Plastics Moulding Trades Association and he has since been a member of the Council of the Federation for the whole period of its existence. In addition he has been a member of the executive committee for many years, chairman of the Publicity Committee for 15 years and at various times chairman of the Plastics Material Manufacturers' Section.

HOWARDS OF ILFORD, LTD.—Mr. Ean C. Baillie, C.A. of Layton-Bennett, Billingham and Co., has been appointed a director of Howards and Sons, Ltd., and Howards of Ilford, Ltd. Mr. Edward G. Rooney of The Charterhouse Investment Trust Ltd., has been appointed a director of Howards and Sons, Ltd.

PECO MACHINERY SALES (WESTMINSTER), LTD.—Projectile and Engineering Company has formed a separate sales organization, "Peco Machinery Sales (Westminster), Ltd." The offices of the new company are at 28 Victoria Street, S.W.1 (telephone Abbey 1793-5). This organization will handle all home and overseas sales of the parent company's machinery. The sales company is a fully owned subsidiary of the parent company and the directors are Mr. A. J. Chambers, M.B.E., M.I.Prod.E., Mr. M. Freund, M.I.Mech.E., and Mr. E. Gaspar, A.M.I.Mech.E. Mr. L. W. Lees has been appointed sales manager.

Mr. A. J. Chambers, who is the chairman of the new company, is also managing director of the Projectile and Engineering Company He has been associated with this company for 35 years and is well known in the engineering industry. Mr. E. Gaspar is chief designer of the Projectile and Engineering Company and has been associated with the development of PECO machinery since its inception. Mr. M. Freund is a well known authority on plastics and on the export of machinery.

TEXTILE PIRNS.—A new standard published by British Standards Institution, 2 Park Street, London, W.1, B.S.2098:1954, deals with weft pirns for rewinding cotton and spun rayon yarns, parallel pit pirns for direct spinning cotton and spun rayon yarns, and weft pirns for shuttles in pirn changing automatic looms. Basic dimensions in each case are given for pirns which may be made from wood, metal or plastics.

AMERICAN LIBRARY IN LONDON.—The Library of the United States Information Service, 41 Grosvenor Square, London, W.1, keeps a large stock of American reference books which may be borrowed free of charge by any resident of Great Britain who applies either in person or by post. Among recent additions in the industrial sections are publications of the U.S. Atomic Energy Commission, U.S. Department of Commerce, and National Bureau of Standards.

CATALIN LTD.—The directors announce that the Group net profit for the year ended December 31, 1953, was £8,300 (£6,084) after taxation of £10,820 (£8,784). With the balance brought forward of £11,337, there was available £19,637 (£16,600). The directors recommend a payment of 5% (as last year) and a Transfer to General Reserve of £10,000, leaving to be carried forward £4,123.

FABRICATION AND APPLICATIONS OF P.V.C. AND POLYTHENE.—A one-day symposium was held on April 8 at the College of Technology, Suffolk Street, Birmingham. Intended for chemical and public service engineers, architects and plastics technologists, the symposium included a demonstration of fabricating techniques analysed by Prodorite, Ltd., and Schori Metallising Process, Ltd.

CANADIAN INTERNATIONAL TRADE FAIR, TORONTO, 1954.—The Projectile and Engineering Co., Ltd., London, will be on display at this exhibition. The company's managing director, Mr. A. J. Chambers, will be attending the Fair, together with a group of his technical experts.

(Left to right) Mr. A. J. Chambers, Mr. E. Gaspar, Mr. L. W. Lees.

PLASTIC CONDUIT AND FITTINGS.—The General Electric Co., Ltd., has perfected a conduit tube made in p.v.c. for use in electrical installations where severe corrosion conditions exist. The constituents of the tube are so balanced as to enable it to be manipulated and handled like steel conduit. Strips can be cut with ordinary cutting tackle, and no special dies need be kept for the purpose. So far as limits and size are concerned, the tube conforms to British Standard 31. When p.v.c. tube is used a separate earthing wire must be run to ensure satisfactory continuity. When the tube is supported by saddles, these should be placed at closer intervals than for steel. Standard G.E.C. malleable-iron or pressed-steel conduit fittings can be used with this tube, provided that they are either coated with p.v.c. or painted with a special coating of chlorinated rubber. Further details may be obtained from the General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

COLLAPSIBLE TUBES.—At an exhibition held in their London offices at 9 Conduit Street, London, W.1, Cascelloid, Ltd., introduced the range of Tuboplas polythene collapsible tubes which they are to manufacture in Great Britain, under licence from Tuboplas, Vevey, Switzerland. The tubes are manufactured in a specially designed machine which has been imported from the Swiss company. It combines the extruded tube body with the injection-moulded head and nozzle by a welding process. When used in the form of collapsible tubes the empty containers are supplied open, to be filled and subsequently heat sealed by the packer. The machine will also produce polythene squeeze bottles. These products have found considerable favour on the Continent and it is anticipated that large markets exist in this country.

MECHANICAL HANDLING EXHIBITION.—The Fourth Mechanical Handling Exhibition and Convention is to be held at Olympia, London, June 9-19. It will be opened by the Minister of Supply, Mr. Duncan Sandys, M.P. Included in the programme of meetings is an open forum "In Search of Better Handling," at which a number of experts will answer questions.

BRITISH VISQUEEN LTD.—British Visqueen Ltd., have now assumed I.C.I.'s responsibilities for polythene film and have begun marketing Visqueen. I.C.I.'s product, sold for many years as Alkathene film, has been withdrawn to make way for the improved quality Visqueen. British Visqueen Ltd. is the joint company formed last year by Imperial Chemical Industries Ltd. and the Visking Corporation, of Chicago, U.S.A. Polythene was invented by I.C.I., who were also the first to manufacture it in film form, and the Visking Corporation are today the world's largest makers of polythene film. British Visqueen Ltd. now have the largest production and sales outside the U.S.A., and when the company's new factory at Stevenage is completed in July existing production capacity will be doubled. Provision is being made for extensions to meet possible future demand. British Visqueen Ltd. will not convert or print Visqueen film; their policy is to act as suppliers to the converted industry of high-quality film.

RADIO COMPONENTS SHOW, 1954.—The Radio and Electronic Components Manufacturers Exhibition, 1954, was held at Grosvenor House, London, on April 6 to 8. Many new developments were shown, particularly involving the use of new plastics materials and new manufacturing techniques.

Belling and Lee, Ltd., showed aerials suitable for commercial TV. Co-axial feeds for TV were shown by Aerialite and Telcon, the latter having helical membrane co-axial cables of 50 and 75 ohm impedence.

P.t.f.e. (polytetrafluoroethylene) is finding increasing use as wire and cable covering permitting operation to 250° C. This material is also used by Wingrove and Rogers, Ltd., for the insulation of condensers.

Micanite and Insulators Co., Ltd., showed a range of built-up mica products including thermosetting synthetic bonded micanite in tape and sheet form, to be applied cold and heat-cured, giving a tough, resilient insulation.

Bakelite, Ltd., showed polyester resins for potting components as well as moulded components made from nylon-filled phenolics, modified polystyrene and track-resistant alkyd moulding powders. Glass fibre structures seen on their stand included a lifeboat aerial mast and a stressed skin construction for radar equipment housing.

British Moulded Plastics, Ltd., showed electrical components moulded from shock-resisting polystyrene material.

Hellermann, Ltd., showed coil formers moulded in polystyrene and polythene.

Thos. De La Rue and Co., Ltd., have produced a new grade of Traffolite with a translucent centre sandwich which can be used for illuminated signs. Another type has two coloured translucent centres and two illuminated coloured printings can be shown simultaneously.

Egen Electric, Ltd., introduce two new pre-set potentiometers, carboned and wire wound. They are completely enclosed in phenolic mouldings for durability and dust-proofing.

Parmeko, Ltd., showed transformers with cast resin construction. The new Jupiter range is claimed to be almost indestructible and completely moisture-proof and resistant to tropical conditions. Due to the good cooling properties of the resins higher ratings can be employed with given core sizes.

Carr Fastener Co., Ltd., showed new valve holders in phenolic material and in Mikacin as well as sockets and components for use with printed circuits and transisters.

Amongst components shown by Weymouth Radio Manufacturing Co., Ltd., were resin potted delay lines.

The Ministry of Supply exhibit showed activities of various research establishments of the Ministry. One of the interesting new developments is a range of sealed RF plugs in which the sealing of the central electrode is achieved by the use of a rubber sleeve engaging in recessed grooves in the electrode, the whole then surrounded by a polythene moulding.

Mycalon is a new mouldable humidity-proof insulation material introduced by Micanite and Insulators Co., Ltd.

Creators, Ltd., showed an exposure meter in a p.v.c. case, the bottom part, cover and hinge all being moulded in one piece with instructions for working moulded-in.

Whiteley Electrical Radio Co., Ltd., showed a number of transformers and chokes using Araldite cast resins. The company is also developing printed circuits for various government research laboratories.

CONSTRUCTIONAL TOY.—The Danish toy described in *Plastics*, March, 1954, page 88 was developed by Niels Johannsen, 11 Frederiksgade, Copenhagen, Denmark and the sole rights for the toy belong to Mr. Johannsen and not as stated to Messrs. A/S Bengros.

IMPORT DUTY FOR P.V.C. SHEET.—The Board of Trade are considering an application for an increased protective duty on:

Articles made wholly or partly of polyvinyl chloride resins or their copolymers the following:

Sheets or sheeting of a weight of not less than 12 oz. or more than 35 oz. per square yard, not backed with a textile material, but otherwise whether or not treated or operated upon in any way.

Representations which interested parties wish to make should be addressed to the Board of Trade, Industries and Manufactures, Division 1, Horse Guards Avenue, Whitehall, London, S.W.1.

MOULDERS GROUP DISCUSSION MEETING.—Organized by the British Plastics Federation, a meeting of Works Managers was held on April 8 and 9 at the Spa Hotel, Tunbridge Wells, Kent. On the Thursday two discussions were held, the first on the technique of management opened by Mr. J. B. Fortune of Hornflowa, Ltd., the second on the training of supervisors and operators opened by Mr. G. F. Sly of U.E.L., Ltd. On Friday compression tool standardization was discussed, led by Mr. H. Proctor of Joseph Lucas, Ltd., followed by a talk on scrap and its re-use, opened by Mr. S. Thompson of Punfield and Barstow (Mouldings), Ltd. On Friday afternoon delegates toured the factory of Kent Mouldings at Sidcup.

PACKAGING SECTION FOR THE FEDERATION.—A special section of the general fabricators section of the fabricators group has been formed by the British Plastics Federation, to deal with plastics in packaging. It is to hold its first meeting soon to discuss plans and procedures. Membership is restricted to companies in the Federation.

EXTENSION TO PATENT OFFICE LIBRARY.—Immediate open access to over 30,000 scientific and technical periodicals in all languages has been provided by a new extension to the Patent Office Library, now open to the public in the basement of the headquarters building in Chancery Lane, London. Another important addition will be the provision of a special section for bibliographies and abstracts. The Patent Office Library itself, a reference institution of international repute, has a total stock of 360,000 volumes.

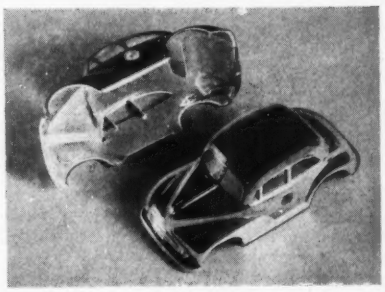
UNPUBLISHED REPORTS.—A bulletin issued by the Technical Information and Documents Unit of the D.S.I.R., 15 Regent Street, London, S.W.1, records progress in the research into materials and methods to produce polyethylene linings on concrete and other surfaces. A copy of the full report, comprising 16 pages, is available from the T.I.D.U., under report No. 0644/4.

BRITISH XYLONITE TO ACQUIRE THREE NEW COMPANIES.—British Xylonite Co., Ltd., has announced that negotiations for the acquisition of Vogue Manufacturing Co., Ltd., Vogue Placings Ltd., and Thermold Ltd., have now reached an advanced stage. It is the intention of the company to carry on the businesses in Melton Mowbray as heretofore.

NEW POLYTHENE FILM.—British Cellophane, Ltd., have announced a new film, B.C.L. "K" polythene, having one surface keyed by a special process, the main purpose of which is to ensure that the film can be successfully printed by normal methods. Tests with a large number of printing inks carried out by the company's research and development division have shown that the specially treated surface gives excellent adhesion with a majority of inks, and in no way affects the other properties of the film, such as chemical resistance, flexibility, heat-sealability and toughness. It is also expected that the improved film will give superior adhesion in laminations and in the manufacture of pressure sensitive tape.

LACQUERS FOR POLYSTYRENE.—Modern Industrial Finishes, Ltd., Thames Chemical Works, Lower Road, Northfleet, Kent, have produced lacquers suitable for application to polystyrene. The lacquers are used, mainly, for coatings in connection with metallizing by vacuum coating or by silver nitrate reduction spraying methods.

The base coat lacquer, S.1545, will air-dry in three to four hours, but may be stoved for 45 min. at 50° C. Application is by dipping, the rate of withdrawal varying from 1 in. to 1½ in. per minute according to the intricacy of the moulding. Storage and "pot" life is unlimited but the lacquer should be kept to low viscosity by the daily addition of appropriate thinners. When dry, the lacquer



Examples of finish obtained by use of lacquers manufactured by Modern Industrial Finishes Ltd.

gives a tough coat which does not become brittle with age.

After plating, the top coat lacquer, S.1708, is applied in the same manner as the base coat. Stoving is for 10 minutes at 50° C. to release the initial solvents, otherwise some blooming may occur in adverse conditions: The lacquer is air dried for a further 60 minutes before dyeing. The top lacquer can be coloured by immersion in alcohol-solvent dye baths.

FIRST ATLANTIC TELEPHONE CABLE.—Submarine Cables, Ltd., jointly owned by Siemens Brothers and Co., Ltd., and Telegraph Construction and Maintenance Co., Ltd., will participate in the manufacture of a submarine telephone cable system across the Atlantic Ocean. The project will take three years to complete at an estimated cost of 12½ million pounds.

The cables will be of the single co-axial type already well tried out in shallow water. They will be insulated with polythene with 5% of polyisobutylene and a small amount of anti-oxydent to prevent slight deterioration of qualities during processing.

MODO, LTD., manufacturers of plastic goods and ancillary products which has factories in Inverkeithing, Glasgow and London have opened a new factory at Valleyfield, Fife.

FIBRE FORM LTD.—Mr. L. W. Moritz, chairman of Fordham Pressings, Ltd., told shareholders at the annual general meeting that negotiations have been completed for the company to acquire a majority shareholding in Fibre Form Ltd. This company specializes in the production of resin impregnated pulp mouldings.

NEW DIRECTOR FOR INTERNATIONAL NICKEL.—Mr. T. G. Montague, president of the Borden Company has been elected a director of the International Nickel Co., of Canada, Ltd.

MR. ERIC STEIN.—Chairman of the chemical group of the Distillers Co., Ltd., Mr. Stein has been co-opted as a member of the Council of the Association of British Chemical Manufacturers.

SCHORI METALLISING PROCESS, LTD.—The telephone number of the company's works and offices at Brent Crescent, London, N.W.10, has been changed to Elgar 3533.

O. AND M. KLEEMANN LTD. announce that they have entered into an agreement with the Ideal Toy Corporation which will enable them henceforth to produce and market in Great Britain certain items which have proved successful in the American market. The Ideal Toy Corporation are reputed to be the largest producers of plastic toys in the United States. O. and M. Kleemann Ltd., believe this mutual arrangement will benefit the markets in which they have been traditionally interested.

TRANSPARENT PAPER, LTD.—As from March 31, 1954, the sales offices of Transparent Paper, Ltd., Clearpack, Ltd., and Flexible Packaging, Ltd., will function from Halifax House, 51-55 Strand, London, W.C.2. The new telephone number is Trafalgar 4311.

SANIGUARD APPLIANCES LTD.—The company has erected a factory on the L.C.C. Estate at Hainault in Essex. The company has a large export programme and the factory space available from the erection of the new plant will greatly assist in the fulfilment of its ambitions.

SIR HARRY PILKINGTON RE-ELECTED PRESIDENT OF THE F.B.I.—At the annual general meeting of the Federation of British Industries held in London recently Sir Harry Pilkington was re-elected president for a second year of office. Sir Harry, who is 48, is chairman of Pilkington Brothers, Ltd., St. Helens, Lancs, the glass manufacturers, and a director of its subsidiary companies at home and overseas.

DERMATITIS.—By stating that "More production time is lost each year as a result of dermatitis than by any other industrial disease," Aero Research Technical Bulletin No. 135 draws attention to one of the most serious occupational hazards known to industry. The Bulletin is reprinted from an article which was published in Machine Shop Magazine for December, 1953. The problem is particularly acute in the woodworking industries where resin is used in liquid form in large quantities, and the article does much to offer practical advice as to special precautions to be taken in the prevention of the disease. Copies of this important Bulletin are available from Aero Research, Ltd., at Duxford, Cambridge.

BRITISH CHEMICAL PLANT MANUFACTURERS ASSOCIATION. — The thirty-fourth annual general meeting of the British Chemical Plant Manufacturers' Association was held in London on April 13. Mr. W. J. Hooton of S. H. Johnson and Co., Ltd., was elected chairman. The meeting was followed by a private dinner discussion meeting when the subject was "The Threat to British Engineering Exports."

5-ton container produced by L. F. Dove, Ltd., in association with University Commercials and Coachwork, Ltd. The floor is of melamine-surfaced laminate, the sides of a composite veneer faced inside and out with decorative Warerite veneer, and the roof of glass-fibre polyester laminate.

NEW BRITISH STANDARD.—British Standard 2456:1954 covers the use of plastics materials for the manufacture of floats for ball valves. Copies of this British Standard are available from the Sales Branch, British Standards House, 2 Park Street, London, W.1, price 2s. 6d.

WORKING PARTY ON CORROSION.—An international body, the Working Party has once again resumed its activities and a Corrosion Congress will be held in 1954 on November 11 and 12 in Frankfurt. The secretarial work of the Congress is in the hands of Dechema, Frankfurt (Main), W.13.

P. B. COW AND CO., LTD.—The company has now received the consent of the Capital Issues Committee to the issue of 2,475,000 ordinary shares of 4s. each as capitalization of reserves. Permission has also been granted for the use of renouncable Allotment Letters in connection with the above issue of shares.

The company's dividend for the year ended December 31, 1953, was 25%.

THE BRITISH XYLONITE CO. LTD.—At a board meeting of the above company held on April 14, the following dividends were recommended in respect of 1953:—Preference Shares.—2½% actual, less income tax at 9s. in the £, making 5% for the year. Ordinary Stock.—8% actual, less income tax at 9s. in the £, making 10% for the year. The annual general meeting will be held on May 31.

APPLICATIONS OF PLASTICS TO CHEMICAL ENGINEERING.—A symposium and exhibition will be held on May 26 at the University, Edgbaston, Birmingham, by the Midland Section of the Institution of Chemical Engineers. The following papers will be presented: *Polyester Resins*, by J. R. Stevenson (British Industrial Plastics Ltd.). *Flourine-containing Polymers*, by H. M. Whitcut (I.C.I. Ltd.). *Plastic Linings, Coatings, Cements and Fabrications*, by V. Evans (Prodorite Ltd.).

Visitors may apply for tickets to Mr. M. G. D. Bailey, 1 Wentworth Gate, Harborne, Birmingham, 17.

GERMAN PLASTICS FAIR.—In September, 1955, in Düsseldorf, The Plastics Trade Fair will be held, organized by Nordwestdeutsche Ausstellungs - Gesellschaft m.b.H. (Nowea).

NEW TYPE OF CLAMPING SYSTEM.—Power Jacks, Ltd., have introduced a simple means whereby a wide variety of holding problems may be overcome. Known as the Newton Clamping System, and of special use in the holding down of Perspex sheet during fabrication, the unit comprises a hand-operated hydraulic pump of the lever or screw type and one or more hydraulically operated plungers which may bear directly on the workpiece or act through a system of lever or bell cranks.

Pressure can be predetermined according to the type of material to be held and limited to prevent crushing or distortion due to overloading. The clamps are released simultaneously and fluid returns to the pump container, retracting the plungers under the action of internal return springs. The unit is flexible in its application and the installation is simple, straightforward and inexpensive.

TALKING SHOP . . .

Science in Industry. Sir Ben Lockspeiser, Secretary of the Department of Scientific and Industrial Research, spoke of the future of science in industry in a special bicentenary lecture to the Royal Society of Arts. He spoke of the need for administration and management to be aware of and understand scientific achievement, if it were to be exploited for social and economic good. "The proportion of manufactured goods finding their way into the increasing international market has not changed appreciably for many years but their character has changed very considerably. There has been a steadily increasing trend towards manufactured products of the newer technologies and we cannot afford to fall behind others in the invention of new processes in the making of new products."

Speaking of chemicals from oil Sir Ben said that there were wide possibilities for the blending of plastics with synthetic rubbers for improving their processing and extrusion characteristics, their tensile strength, hardness and toughness. "This new industry, a typical product of the century, born in the laboratory, nurtured by organized science, turned to practical account by the highest class of chemical engineering, will, in all probability, become one of the main activities of the chemical industries of the world.

"Through the manifold industrial uses of its end-products a vast industrial complex is likely to come into being which we should endeavour to see reflected in our own industrial development," he declared.

★ ★ ★

Plastics fabrication as a hobby. A five-page supplement to *Mechanics* gives useful information required by the handicraft worker concerning the preparations and methods of fabrication of principal materials used in the home workshop.

★ ★ ★

Future for Plastics Car. The motoring correspondent of the *Evening News* revealed recently that the aircraft company, with which Air Vice-Marshal Donald Bennett, war-time head of the R.A.F. Pathfinders, is connected, plans to build a plastics-body car. The air vice-marshal, who is an open-car fan and rally competitor, is convinced that there is a great future for the plastics car; not as a rival to mass-produced models but for the specialist who likes a car built to his own design.

★ ★ ★

Corvette Details. Mr. E. J. Premo, chief body engineer of the Chevrolet division of General Motors in the U.S.A., speaking to the Society of Plastics Industry said that "A marriage of plastics and steel is more imminent than a displacement of steel by plastics." Over a longer period the prospects for plastics may prove more favourable because of economics of their production compared with steel.

Chevrolet are producing the Corvette, of which 10,000 units are to be produced in 1954. Mr. J. B. Lunn, of Lunn Laminates, told the same meeting that the first Corvette body was produced for Chevrolet in about 4½ months, compared with 2 to 2½ years required to make comparable tools for a steel body. In figures, the Chevrolet sports car cost about $300,000 in fabrication models and moulds compared with an estimated $4m. to tool up for a conventional steel body.

★ ★ ★

Commercial Vehicles. On page 173 of this issue we have published a photograph of a new commercial vehicle by L. F. Dove, Ltd., making extensive use of plastics materials.

In this vehicle use has been made of a one-piece polyester resin bonded glass fibre laminate roof, mounted on a body constructed of laminated panels faced both inside and outside with a Warerite decorative laminate. For the platform floors a ribbed non-slip laminate with melamine resin surface has been employed. This flooring materal is a new product of Warerite, Ltd.; it is also available as Chequerplast in a raised chequered design. Durability tests on the flooring were made by dragging loads across it and rolling trucks with steel castors across a test ramp. The laminate withstood the full loads in each case.

★ ★ ★

Button Standards. A technical committee has been set up to prepare a British Standard for the manufacture of buttons.

★ ★ ★

H.M.S. Victory. *The Hampshire Telegraph and Post* recently described redecoration and preservation being carried out on H.M.S. Victory in Portsmouth dockyard. A plastics spray is being used in the battle against the death-watch beetle.

★ ★ ★

Ties. Another note about plastic ties (see last month, page 126) has appeared—this time in the *Leicester Evening Mail*. H. J. Boulting, Ltd., 21 Wellington Street, Leicester, are said to produce the ties in 30 different shades. Between 2,000 and 3,000 ties are produced every day.

★ ★ ★

Aircraft Construction. Mr. Lorne Welch, of the plastics division, R.A.E., lectured on the use of plastics in aircraft construction to graduates and students of the Royal Aeronautical Society, reports *The Aeroplane*. He emphasized the need to change habits of thought from the "Meccano" principles used in metal constructions, to take advantage of the "directional" strength properties of asbestos and glass fibre reinforced materials.

★ ★ ★

Radiation Production. Suits of Ultron vinyl plastic are being used at a Monsanto laboratory in the U.S.A. to prevent absorption of airborne radio-active particles through the skin as well as ingestion through the mouth, nose, eyes and ears. The suits consist of trousers and hood—the trousers have boots welded to the legs. The suit can only be used once in radio-active applications but after decontamination can be re-used for other applications to give protection from toxic gases, solvents and bacteria.

P.V.C. for G.P.O. Postwomen are being issued with plastic-finished coats with adjustable hoods, instead of oilskin coats and sou'westers.

★ ★ ★

Fish Fashions. Real crabs, sea horses and other fishes appear to be the latest fashion in costume jewellery. *Everybody's* recently told the story of the manufacture of this "jewellery" in Colchester. With the exception of sea horses, which are imported from the Mediterranean, most of the "raw material" is got locally. The fish are first placed in baths of formaldehyde to clean and toughen them. They are then placed in basins containing a preservative until they are ready for the final stage of manufacture, i.e. dipping in a transparent plastic solution to give a hard, glossy coating.

★ ★ ★

Plastics Zebra Crossings. The vague definition of the word "plastics" is bringing more and more products within the scope of an industry which already copes with a large variety of materials. Without such a definition to use for reference, one cannot blame the Road Research Laboratory for describing the white, resin-based composition used for marking pedestrian crossings as "plastic white line markings." This material was originally developed for marking traffic lanes, and used for this purpose it generally remains in good condition for at least two years. However, it has come into disrepute for its limited durability when used on pedestrian crossings. An article in *The Surveyor* suggests that when synthetic resins are used instead of the natural product, these compositions may prove more durable. Commenting on prefabricated sheets of synthetic resin (presumably p.v.c.), it is said that sheets 1/32 in. thick intended to be stuck on the existing road surface provide a durable stripe and good white colour. The first stripes laid, however, proved to be rather slippery when wet and trials are in progress to provide a non-slip material.

★ ★ ★

Plastics Replaces Thatching. Considerable savings in costs are expected from an idea put forward by Mr. G. A. Douse, an agricultural district advisory officer, at a recent meeting of the Canterbury Farmers' Union. It is envisaged that a sprayed-on coating of the cocoon type could effectively be used.

★ ★ ★

Million-dollar Idea. The *City Press* issue recently gave reports of an embryo idea which it is stated may eventually save the United States oil industry over £20,000,000 a year. Plastic balloons of microscopic size will be floated on the surface of oil storage tanks to reduce evaporation. We shall be interested to learn of the method of fabrication and material employed in the manufacture of plastic balloons of this size.

★ ★ ★

Hiding the Bomb. We understand from *The Socialist Leader* that it is now possible for enemy agents to smuggle atomic bombs into any country. This is because plastic protective shields can prevent detection of radio-active materials by means of Geiger counter instruments normally used.

PLASTIKON.

PATENT REVIEW

The following abstracts have been made from specifications at the Patent Office, with the permission of the Controller of H.M. Stationery Office. The country of origin for Convention Applications is shown in parentheses. Complete specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 2s. 8d. each (including postage).

B.P. 703,010. Production of moistureproof films coated with vinylidene chloride copolymers. W. Berry, C. R. Oswin, R. A. Rose. To: British Cellophane Ltd.

B.P. 703,043. Extrusion apparatus suitable for extruding thermoplastic material. To: Celanese Corp. of America (U.S.A.).

The design refers especially to double filter assemblies so that one assembly may be operative while the other one, which may have become clogged, is removed from its holder and replaced.

B.P. 703,054. Electric condensers. To: Soc. Française de l'Electro-Résistance (France).

Dielectric thin washers of, e.g. polytetrafluorethylene, are inserted between the conducting elements of a pile used for frequencies exceeding 300 megacycles/sec.

B.P. 703,096. Method of Polymerizing chlorotrifluorethylene. To: British Thomson-Houston Co., Ltd. (U.S.A.).

A particular combination of reaction conditions is employed. Polymeric chlorotrifluorethylene is highly suitable as insulation for electrical conductors of an aluminium type surface, in solution for impregnating. Treated sheets may be moulded or may be made into laminated panels of high heat resistance and good electrical properties.

B.P. 703,153. Articles of clothing impervious to X-rays and Beta-rays. S. Holt. To: I.C.I. Ltd.

The article is made up at least in part by layers of pliable porous plastic material in which substances are incorporated which absorb X-rays and/or Beta-rays. The plastic materials are preferably polyvinyl chloride and polythene.

B.P. 703,205. Buckles and the like. Arnold Wills and Co., Ltd., A. R. Wills.

The inner frame (metal stamping) is covered by an envelope made from two initially flat polyvinyl chloride sheets placed one on each side of the frame. The edges of the sheets extending beyond the frame are then welded together inside and outside.

B.P. 703,226. Moulded bird cage. M. Yellin. To: Bernard Edward Co.

The cage is formed completely of thermoplastic (transparent) material by injection moulding.

B.P. 703,234. Water-soluble condensation products. To: Henkel and Cie, G.m.b.H. (Germany).

The aqueous solutions of the new phenol-formaldehyde condensation products may be employed as glues, textile auxiliaries, protective colloids, etc. Poured into moulds they may be hardened by the addition of acids or acid hardening agents.

B.P. 703,235. Glueing of wood and similar materials without using high temperatures. To: Henkel and Cie, G.m.b.H. (Germany).

B.P. 702,258/60. Electric lighting fittings. General Electric Co. Ltd., L. E. A. Phillips.

Polythene is used for light diffusion in fittings around tubular fluorescent lamps.

B.P. 703,292. Manufacture of upholstery material comprising artificial filaments agglutinated by adhesives. To: Vereinigte Glanzstoff-Fabriken A.G. (Germany). Add. to B.P. 688,315.

B.P. 703,333. Process for hardening phenol-aldehyde condensates. To: Farbwerke Hoechst A.G. (Germany).

Especially good elasticity can be obtained by adding a certain polyvinyl alcohol or a polyvinyl alcohol derivative and hardening the mixture in the presence of an acid catalyst. For making linings, joints between acid-proof plates and bricks, as foundation for acid-proof masonry.

B.P. 703,345. Textile fabric and method for producing the same. J. L. D. Oakley. Comm. from: Cellucotton Products Co.

B.P. 703,379. Spectacle frames. F. O. Wheway.

Brow-bar type frames of metal or plastic material.

B.P. 703,394. Fibrous insulating material. R. S. Vincent, F. J. P. J. Burger. To: British Dielectric Research Ltd.

A mixture of glass fibres and a minor proportion of a polymer of tetrafluorethylene.

B.P. 703,407. Process of making synthetic resins and the products resulting therefrom. K. P. Monroe. To: Standard Dyewood Co. (U.S.A.).

The resins are made from natural catechol tannins containing quebracho extract. (See also B.P. 703,408, B.P. 703,409).

B.P. 703,412. Gum facings and process of making the same. N. Ingersoll, Jr. (U.S.A.).

To enable unskilled workers to produce facings of dentures of a colour and a shape closely resembling that of a natural gum, a mould is formed from a gum facing and used for inserting a second gum facing which becomes part of the finally produced denture. The first set of gum facings may be made from "Vinylite," the second set, which should be coloured and shaded, from, e.g., methyl methacrylate resins.

B.P. 703,416. Manufacture of regenerated cellulose film. W. Berry, C. R. Oswin. To: British Cellophane Ltd.

The film is treated on one side only with colloidal resinous material. The receptivity of the film, on its treated side, to printing inks and adhesives is enhanced without appreciable loss of transparency.

B.P. 703,419. Toothbrushing device. M. Wender.

Two rotary brushes on plastic hubs.

B.P. 703,426. Urea-melamine-formaldehyde resins. A. White, R. G. Roberts. To: I.C.I. Ltd.

B.P. 703,432. Process for increasing the crease-resistance of textiles and urea-complex-formaldehyde treatment baths for use therein. K. Quehl (Germany).

B.P. 703,444. Compositions of matter comprising drying oils and copolymers of vinyl chloride and vinylidene chloride. G. W. Stanton, W. A. Henson, C. E. Lowry. To: Dow Chemical Co.

B.P. 703,459. Artificial fishing fly. A. Hörgard (Norway).

Transparent or translucent wings with transparent or translucent grains or ribs integral therewith.

B.P. 703,519. Face shield or protector for motorcyclists and users of other vehicles. J. Poeder.

B.P. 703,521. Methyl methacrylate polymer of improved electrical conductivity. To: E. I. du Pont de Nemours and Co. (U.S.A.).

At least 5% by weight of aluminium, zinc or stannic halide is dissolved in methyl methacrylate, then polymerization carried out in the presence of a catalyst.

B.P. 703,562. Apparatus or making welded seams in thermoplastic material. H. G. Ellacot, H. K. Heitler. To: National Research Development Corp.

An endless flexible band of a material which will not adhere to the film is moved over the stationary film while a roller resting on the band portion in contact with the film provides heat under pressure to make a welded joint. The band remains in contact with the film until solidification occurs.

B.P. 703,569. Removable sealing means for cartons and the like. I. E. White. To: E. Illingworth and Co. Ltd.

A channel-shaped moulded polystyrene clip with cut-outs on top and interior protrusions under the cut-out portions.

B.P. 703,599. Dryer system, for drying cellulosic seamless casing or tube. H. Sparkes.

B.P. 703,614. Method and means for the manufacture of fabrics consisting of adhesively-bound threads. G. E. Chadwick, G. E. Collins, W. J. Roff. To: British Cotton Industry Research Association.

The adhesive may be a known polyvinyl chloride latex.

B.P. 703,640. Dropper inserts. T. Metten (Germany).

Polyethylene is the preferred material for the hollow insert with a dropper groove and a tubular extension for the entry of air.

B.P. 703,675. Balls for use in playing games. J. H. Warr.

A cricket or hockey ball has a hard core in a relatively thick moulded covering of a mixture of polyvinyl chloride paste and 7% (by weight) of fine fibres (wool, waste, cotton).

B.P. 703,677. Stoppers for bottles. J. M. Jackson. To: Metal Box Co. Ltd.

A moulded push-in stopper of polythene.

B.P. 703,688. Attachment of sealing members to the closure members of bottles, jars or other containers. Hyde Plastics Ltd., P. J. T. Howsam.

The sealing member is forced into an aperture in the closure member and becomes wedged or otherwise fixed therein.

B.P. 703,689. Apparatus for moulding plastic materials. To: A.C.I. Plastics Pty. Ltd. (Australia).

A plurality of upper mould members is moved intermittently in succession to a moulding station where a common lower mould member is raised to close the mould.

The charge is supplied to the lower member between successive upward movements. The upper mould member retains the moulded product when the lower mould member is separated from it. The operations are automatically effected and provision can be made for thermosetting as well as thermoplastic materials.

B.P. 703,690. Removable clothes hook suitable for attaching to vehicle windows. V. Strauss, W. Schmidt.

For easy fixing to, and removal from, sliding windows of motorcars. A plastic back plate carries clothes hooks. The plate as seen from outside may be used for advertising purposes.

B.P. 703,706. Expendable refill containers. C. McE. Duncan. To: Kiwi Polish Co. Pty. Ltd.

Body and top seal of the container may be made of stiff paper, cardboard, polyvinyl chloride or polyethylene or, e.g., heat-sealable regenerated cellulose film.

B.P. 703,728. Nozzles. A. Calderbank.

A solution of polyvinyl chloride is built up to an impermeable body on a ductile metal sleeve to obtain a nozzle of easily adaptable shape (no fixed shape or size) as a collecting nozzle for dust, swarf, fumes and liquids.

B.P. 703,736. Closures for unrefillable containers. R. M. Bernal (Cuba).

Valve carrier body and valve may be of plastic material. A hard metal plate prevents access to valve.

B.P. 703,741. Composite spool for photographic films. P. A. L. Posso (France).

B.P. 703,756. Manufacture of bags from thermoplastic sheet material. To: Cellophane S.A. (France).

Continuous manufacture by passing material in superposed sheets in sequence between heating rollers with grooves to leave an unsealed strip, then along knives and heat-sealing means to form individual bags with sealed bottoms and side edges and open tops.

B.P. 703,781. Spinning toy. To: Louis Marx and Co. Inc.

A light-emitting assembly is mounted within the two hollow members of coloured translucent or transparent plastic material possessing dielectric qualities.

B.P. 703,794. Dispenser for liquid and semi-liquid substances. S. B. Weston.

A funnel-shaped skirt and a dome are moulded integrally, e.g., from plasticized polyvinyl chloride. A tube of polythene, the end of which dips into the liquid, forms the outlet.

B.P. 703,818. Spool structure. To: Dominium Magnesium Ltd. (Canada).

A synthetic adhesive (of the ethyoxyline class) "Aaraldite" constitutes the sole means for securing an annular end face of the drum to the shoulder of the end flange.

B.P. 703,825. Tap jumpers. J. C. Tannock, Plastomatic Ltd.

An annulus of metal around the moulded plastic (or rubber) mushroom-shaped head, e.g., of polyvinyl chloride or polythene, prevents excessive compression.

B.P. 703,850. Apparatus for forming, filling and sealing containers. To: Sterling Drug Inc. (U.S.A.).

A plastic tube (polyethylene) is advanced between a pair of sealers which are moved into and out of sealing relation and which advance during sealing with the tube, then move retracted in opposite direction.

B.P. 703,859. Wrapping materials for foodstuffs. H. P. J. Clark, P. S. Beeching.

An edible and palatable film (water-soluble cellulose ether) with a reinforcement of calcium alginate yarn for sausages.

B.P. 703,866. Heat-insulated bottles or flasks. B. Strong. To: E. Shipton and Co. Ltd.

The double-walled open bottle is made from a thermoplastic material, preferably polythene ("Alkathene") with a moulded end member to close the space between the bottle walls enclosing the neck of the inner portion and screwed over the recessed rim portion of the outer bottle. The space between the bottle walls may be filled with heat-insulating material.

B.P. 703,930. Method of hand knitting and needle for producing hand-knitted fabrics. H. A. M. J. H. Sornin de Leysat (France).

The tubular needle may be made, e.g., from hard or soft plastic.

B.P. 703,944. Hydraulic mould-closing device for injection-moulding machines. To: Eckert and Ziegler G.m.b.H. (Germany).

The pressure side of the hydraulic operating cylinder is connected to a multiplier which is acted upon by a pressure cushion, e.g., pneumatic, independently of the hydraulic pressure.

B.P. 703,962. Thermoplastic compositions of water-soluble cellulose ethers. L. H. Silvernail. To: Dow Chemical Co.

B.P. 703,970. Apparatus for forming hollow articles of thermoplastic material. F. Lorenz.

The material is extruded through an annular nozzle between a sleeve and a plunger extending in opposite directions. The material is subsequently expanded by blowing. Surface patterns may be obtained by using a plastic containing different components or by a certain manner of cooling.

B.P. 703,978. Device for closing a container outlet. P. A. Atterby (Sweden).

Elastic material, such as polyethylene, for a sealing fit.

B.P. 704,070. Atomizers. Rybar Laboratories Ltd., S. B. P. Barnes.

A hand atomizer with a central boss in the liquid reservoir and attached thereto a combined air nozzle and liquid tube assembly. The air comes from a rubber bulb slipped over a nipple underneath the boss with the air-nozzle tube. The parts may be moulded from a synthetic resin.

B.P. 704,097. Impregnation of fibrous materials, such as cardboard, wallboard and chipboard. To: A.B. Statens Skrogsindustrier (Sweden).

The impregnating agent (e.g., a phenol-formaldehyde, a urea-formaldehyde, a melamine-formaldehyde resin, etherified with alcohol) is applied after forming a continuous fibre web.

B.P. 704,098. Process for manufacturing impregnated pressed fibrous material (panels) having a coloured surface. To: A.B. Statens Skrogsindustrier (Sweden). Add. B.P. 704,097.

B.P. 704,103. Process for the production of stuffed products. To: American Viscose Corp. (U.S.A.).

Water-insoluble, alkali-soluble hydroxyethyl cellulose (or gelatine, synthetic resins, etc.) are formed into a seamless tubing. The tubing is inflated, slit, shaped and sealed and the stuffing (for sausages) fed inside the forming and sealing positions.

B.P. 704,143. Process for the treatment of fabrics with resinous condensation products. J. T. Marsh, R. A. Blease. To: Tootal Broadhurst Lee Co. Ltd.

B.P. 704,182. Manufacture of dielectric material. F. J. P. J. Burger, D. S. Margolis. To: British Dielectric Research Ltd.

A mixture of a thermoplastic film-forming material and a powder of high permittivity (40% or more by volume) is dried on a support, then subjected to heat and pressure.

B.P. 704,197. Lampshades. Universal Injection Plastics Ltd., J. Johnston.

B.P. 704,202. Method of making furniture or the like. R. V. Morris. To: Morris Wilkinson and Co. Ltd.

Use of, e.g., plastic sheet embossed or ingrained or otherwise ornamental.

B.P. 704,241. Method of reinforcing a portion of vinyl resin sheet material against tearing and method of bonding two portions of vinyl resin sheet material together. B.B. Chemical Co. Ltd. Comm. from: B.B Chemical Co.

B.P. 704,259. Medical syringe. H. Kater (Switzerland, Germany).

B.P. 704,261. Manufacture of duplex bags from films of thermoplastic materials. W. Berry, C. R. Oswin, J. A. D. Ewart. To: British Cellophane Ltd.

A flattened seamless tube is folded, provided with transverse heat-seals, then the bags are severed along the centre of each heat-seal.

B.P. 704,299. Hard resinous products. To: N.V. de Bataafsche Petroleum Maatschappij (U.S.A.).

Resins prepared from the glycidyl ethers of dihydric phenols.

B.P. 704,316. Hard resinous products and hardenable compositions. To: N.V. de Bataafsche Petroleum Maatschappij (U.S.A.). Add. B.P. 704,299.

B.P. 704,365. Printed circuits. To: Standard Oil Products Co. Inc. (U.S.A.).

A photo-etch process for sensitizing a thin film of copper deposited on a thermoset sheet.

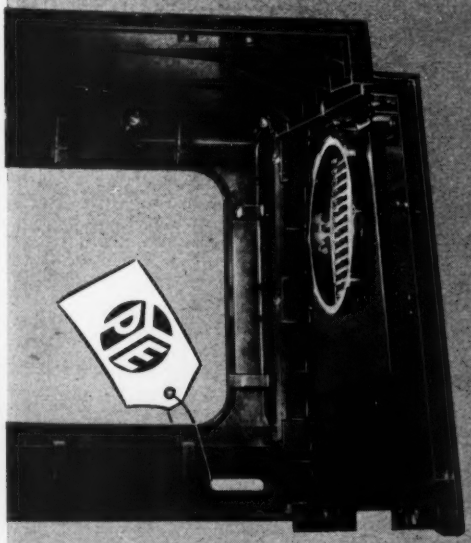
B.P. 704,471. Method of sealing bags. P. H Whiteside. To: H. S. Whiteside and Co. Ltd

A flexible bag of non-heat-sealing material (transparent regenerated cellulose) is provided with a strip of paper (tin foil, etc.) coated with a thermoplastic adhesive. The strip is folded to a W cross-section coated on its inner faces and the inner V inserted into the mouth of the bag, which is sealed by heat and pressure.

B.P. 704,515. Device for topping-up electric accumulators with water. F. J. W. Eichstadt, K. W. Ellis.

A flexible, transparent or translucent bulb of acid-resistant plastic attached to a plastic tube.

They're lively lads at Lorival



Pye needed a moulded cabinet for this popular television set V.2. Lorival's lively lads used their ingenuity and resources to solve the problems involved.

The cabinet is assembled from four parts — two sides, a top and a front. Thick sections provide rigidity. Further strength is achieved by the use of ribs. A skilful feature is an original use of interlocks so that the four parts when bolted together make a solid case.

Why four parts? Ease of handling in manufacture, transit and storage; each moulding highly polished in patterned phenolic material; mass production of uniform components and lower costs.

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Further details and technical literature from:
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Tat Bank House, Oldbury, Worcs.
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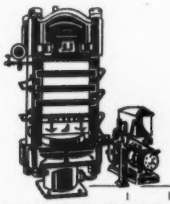
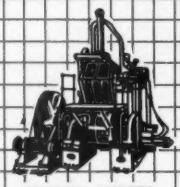
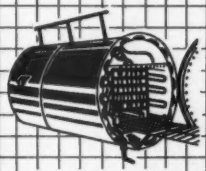
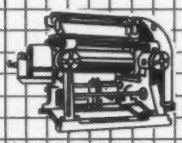

VULCANISING PRESSES

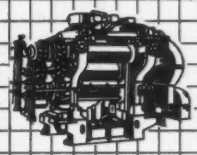
INJECTION MOULDING MACHINERY


INTERNAL MIXERS

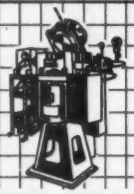

VULCANISING PANS

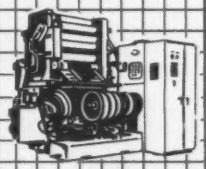

MIXING MILLS

ROTOCURE MACHINERY

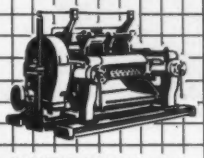

CALENDERS

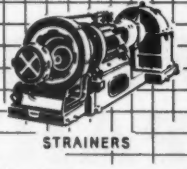
TYRE PRESSES

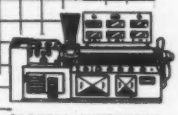

GRAMOPHONE RECORD PLANT


TYRE BUILDERS

LABORATORY EQUIPMENT


PLANTATION MACHINERY


STRAINERS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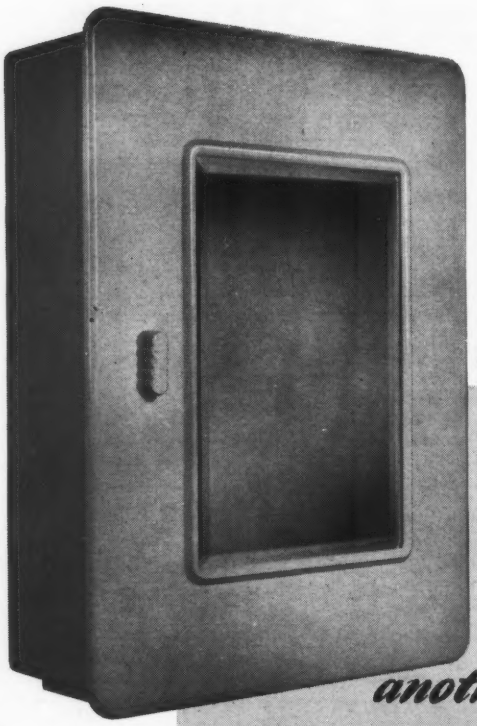
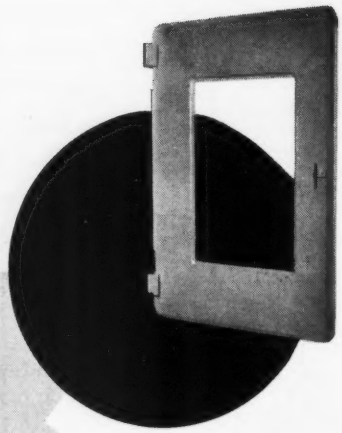


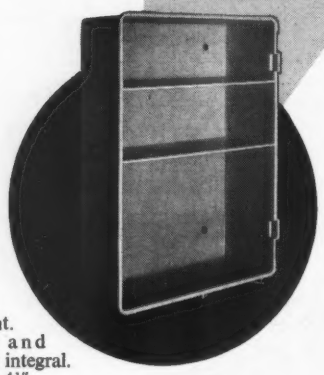
BATHROOM CABINET
By courtesy of Messrs. HOLT IRON & CO LTD



another example of

CLIFFORD LARGE SCALE MOULDING

From **12** ounces - to **60** ounces



Moulded throughout.
Shelves and hinge lugs integral.
16″ × 12″ × 4½″.
Cubic volume 780 cu. ins.

Press capacity to maintain rapid, large-scale production; **experience** to master moulding problems, **Engineers** ready to advise on latest developments and specific requirements . . . this tripart service is the reason why eminent firms say ***Call in Cliffords!***

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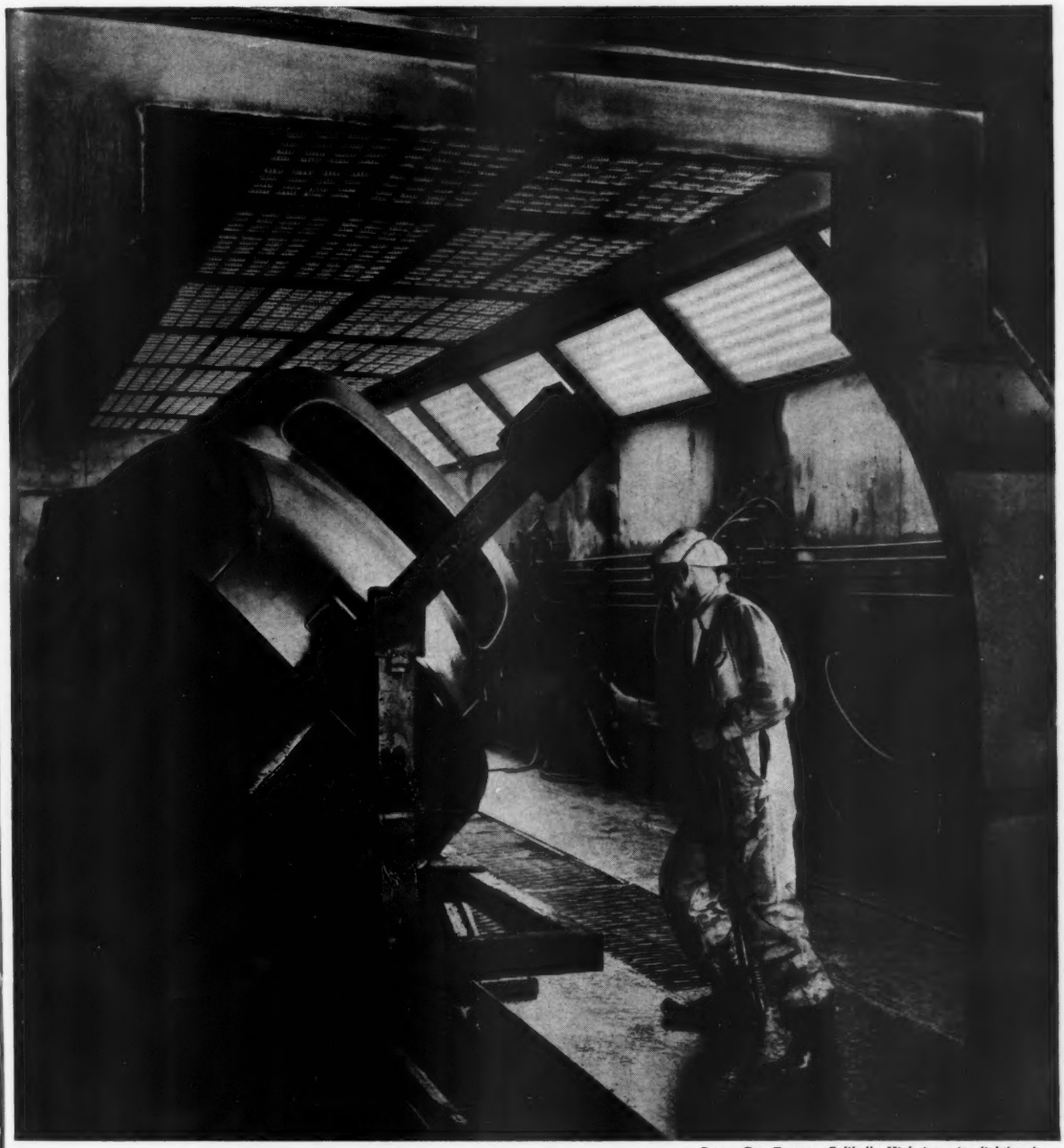


Rover Car Factory, Solihull. High intensity lighting in a body spray tunnel by fluorescent lamps in a glazed enclosure.

Tailored for the job

The lighting of many processes is vital to the smooth and rapid flow of work and to the quality of the finished product. For example, poor lighting could make a spray tunnel into a bottle-neck — each job taking a little too long, a little portion missed, a return to the spray line — and so the whole production line marks time. Whatever form it takes, good lighting not only helps to provide a satisfactory working environment but is an active production tool.

Fluorescent lighting is as good as daylight — only more consistent. It is efficient; it is economical; and it is *flexible*. You can ' tailor ' it, easily and exactly, to the special requirements of production at all stages.

HOW TO GET MORE INFORMATION

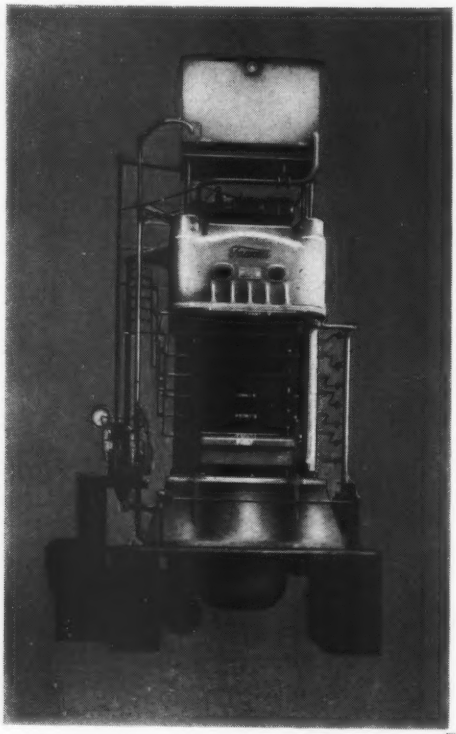
Your Electricity Board will be glad to advise you on how to use electricity to greater advantage — to save time, money, and materials. The new Electricity and Productivity series of books includes one on lighting — " Lighting in Industry ". Copies can be obtained, price 9/- post free, from E.D.A., 2 Savoy Hill, London, W.C.2, or from your Area Electricity Board.

Electricity for PRODUCTIVITY

Issued by the British Electrical Development Association

hydraulic presses for the rubber and plastics industries

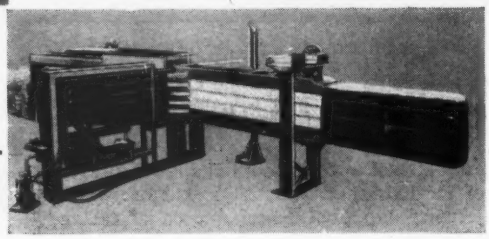
Right:—A Fawcett press for veneer and plywood. Easily adaptable for other materials. Made in various sizes as required.



The ever increasing part played by the rubber and plastics industries in modern economy has lead to a corresponding development in processing plant and technique. Leading the way are Fawcett, Preston & Co. Ltd., who with nearly two hundred years' experience, offer a range of hydraulic and baling presses unsurpassed for reliability and efficiency.

Left:—Operated by its own self-contained pump, this 2,000-ton up-stroking multi-platen press is for pressing asbestos and synthetic materials.

Below:—A specially designed horizontal machine for baling synthetic fibres. Bales are delivered ready for transportation.



Fawcett EST 1758

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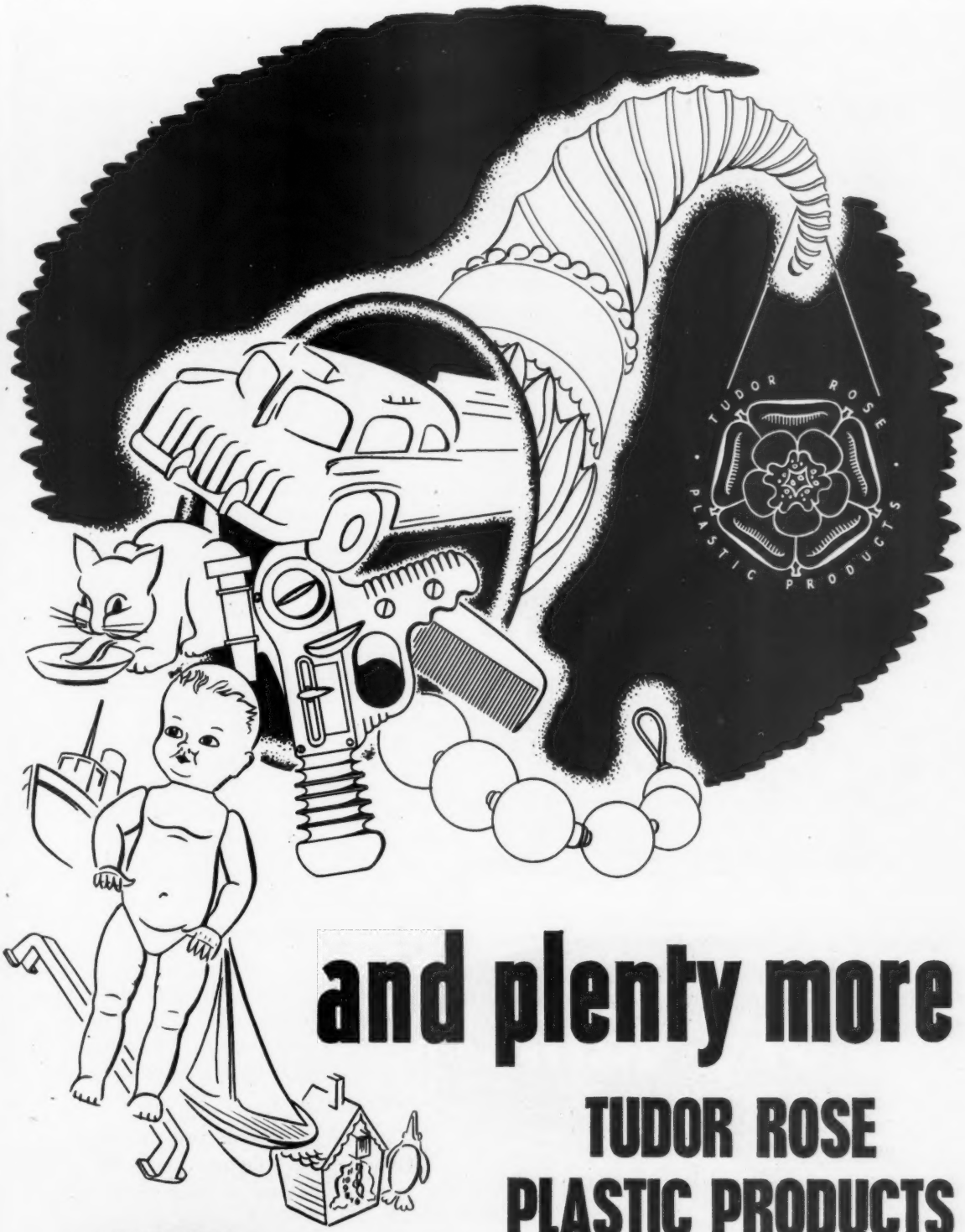

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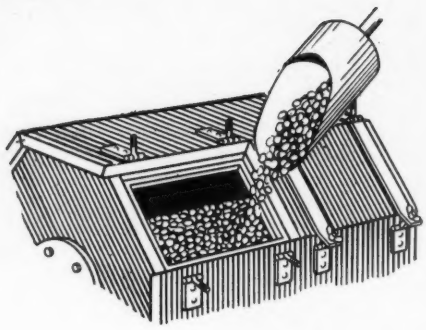
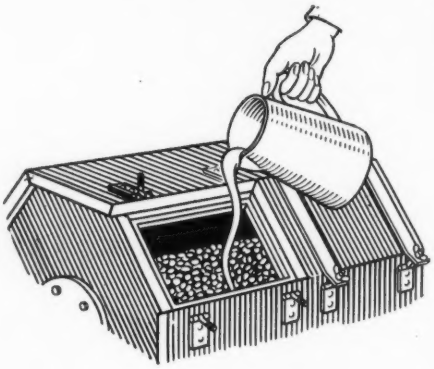


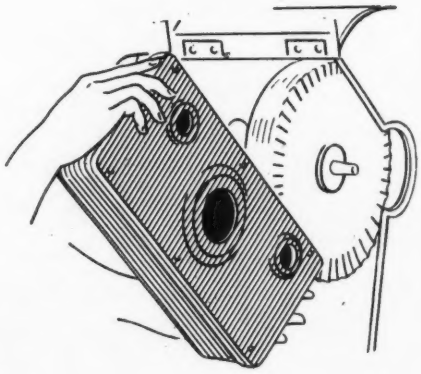
Granules for barrel finishing

for the barrel surfacing of plastics and wooden parts. The granules are of porous stone impregnated with a special bonding and lubricating compound. Their use prevents formation of dust and protects the material from abrasions. The granules can be reimpregnated after a period of use.



Polishing Cream No. 10 for barrel polishing

for the barrel polishing of small and medium sized plastics objects. A lasting, brilliant lustre is imparted with great speed and with the very minimum of supervision.



Bar Polish No. 11 for mop polishing

performs simultaneously the functions of (1) abrasion, (2) finishing and (3) glossing. It is fast in action and not only saves time but results in considerable economies in the replacement cost of mops.

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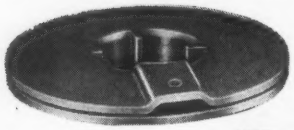

★ *We illustrate examples of Polythene and Diakon injection moulded coil formers of which we have a wide standard range. We shall be glad to send further details on request.*

Precision and quality are indeed our watch-words. From a range of thermoplastics, including P.V.C., Polystyrene, Diakon, Polythene and Nylon, we injection mould a multitude of different shapes and sizes at the rate of thousands.

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An improved general purpose, pure phenol powder with a rapid rate of cure. Specially recommended for small multi-impression mouldings with good surface finish. It conforms to B.S.S. 771, Type GX and can be released against Government departmental specifications.
Available in black, brown and various mottles.

Powder Density (gms/cc)	0.65
Bulk Factor	2.1
Pelleting Properties	Satisfactory
Shrinkage (inch/inch)	0.006–0.007
Density of Mouldings	1.37
Impact Strength (ft./lbs.)	0.13–0.16
Tensile Strength (lbs./sq. inch)	6500–7500
Water Absorption (mgms)	90–100
Electric Strength @ 90°C. (volts/mil.) ...	...60–150
Electric Strength @ 20°C. (volts/mil.) ...	150–250
Surface Resistivity (megohms/cm^2)	
(1) Freshly moulded	10^4–10^5
(2) After 24 hrs. in water	10^3–10^4
Volume Resistivity (megohms/cm^3) ...	10^5–10^6
Cure—seconds to obtain a blister free cup ...	65
Moulding Temperature	300°F–350°F

RCL

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MOULDING POWDERS • FINE COLOURS • CHEMICALS

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This photograph conveys some idea of the size of these mouldings.

LARGE RADAR REFLECTORS
moulded from DURESTOS
REGISTERED TRADE MARK
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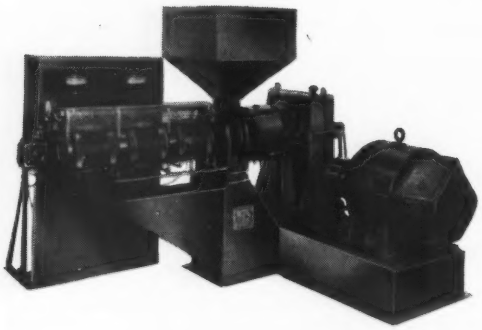
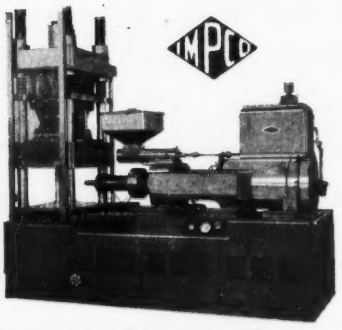
FINNEY HYDRAULICS



SELF-CONTAINED HOBBING PRESSES

Hand or pump operated in sizes from 200 to 1,000 tons. Essential for cheaper and quicker production of moulds. Fabricated in high-tensile steel, they are completely self-contained, easy to operate and with ample daylight and bolster area.



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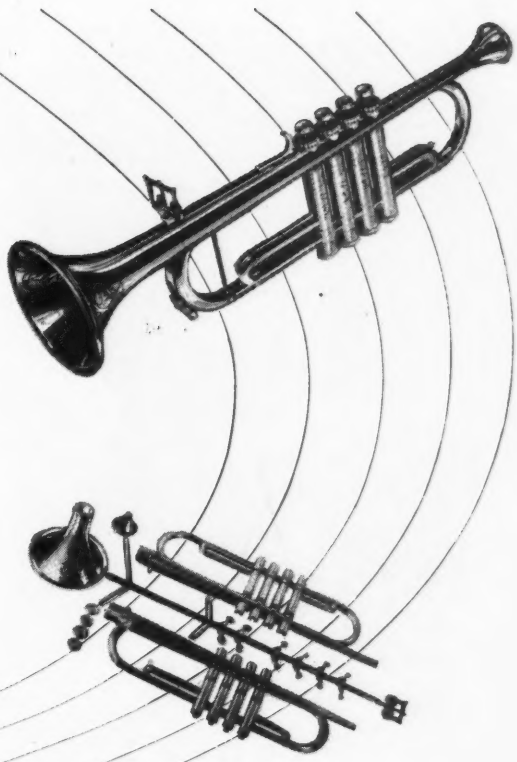
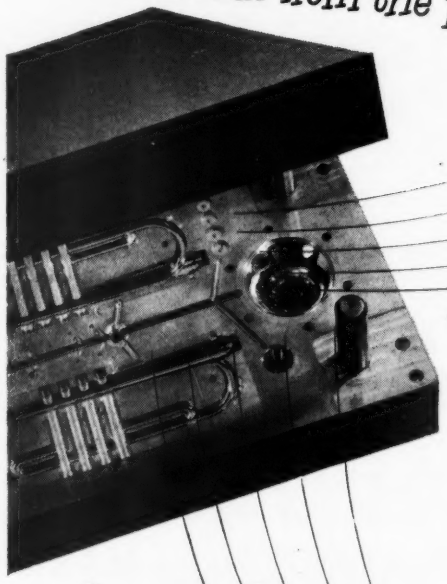
this is the trumpet



This unique plastic toy trumpet—a 4-reed actual playing model—contains 17 separate components that are injection moulded *in one operation*, in one mould. The two main halves of the trumpet must be absolutely air-tight after assembly, and the valves must operate easily and seal completely. Maximum rate of production and ease of assembly are, of course, vital requirements.

that's made from the parts



that come from the mould (of cunning design)

Under these conditions it was immediately apparent that neither the component design nor the mould were going to be "kids stuff". We, however, welcome enquiries for difficult moulds—and the not so difficult. The same thought and craftsmanship will go into both. That's the only trumpet *we* blow.

The trumpet is moulded by Thames Valley Moulders Ltd for Selcol Products Ltd on a Peco 8 oz machine.

that profits the man

that makes the toy— that Jack blows!

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-when the discussion turns to a moulding

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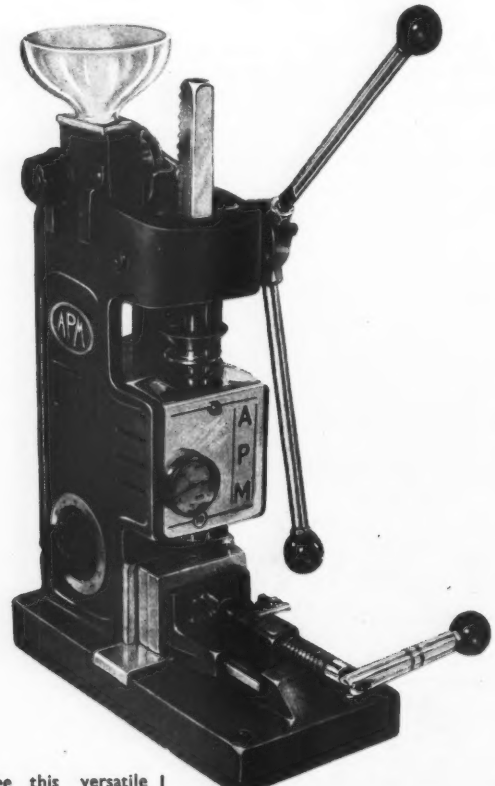

APM

HAND OPERATED BENCH INJECTION MOULDING MACHINE

★ **The A.P.M. machine is suitable for working all thermoplastics such as Cellulose Acetate, Polystyrene, Alkathene, etc.**

★ **A complete mould service is available and standard mould blanks are supplied.**

★ **Maximum moulding capacity 2/3rds oz. (19 grms.) per injection.**

★ **Attainable production rate up to 100 injections per hour depending on mould design.**

★ **A Hopper giving semi-automatic feed control and a thermometer for heat control are incorporated in this Model.**

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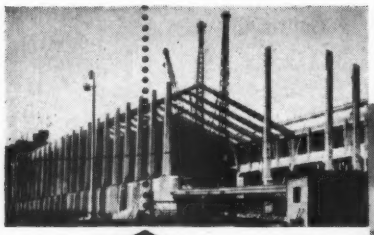

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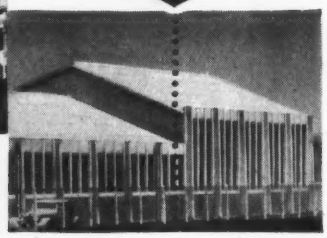

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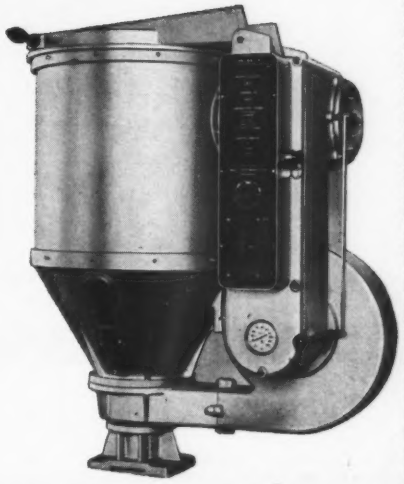

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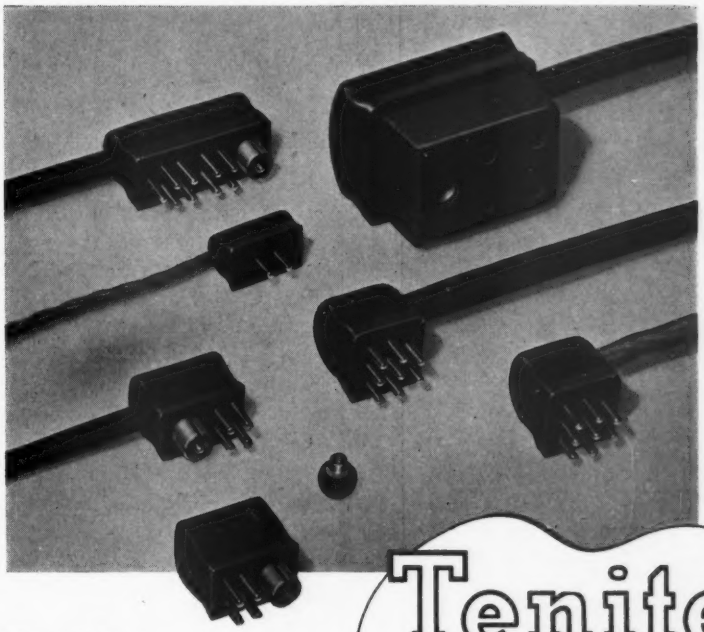

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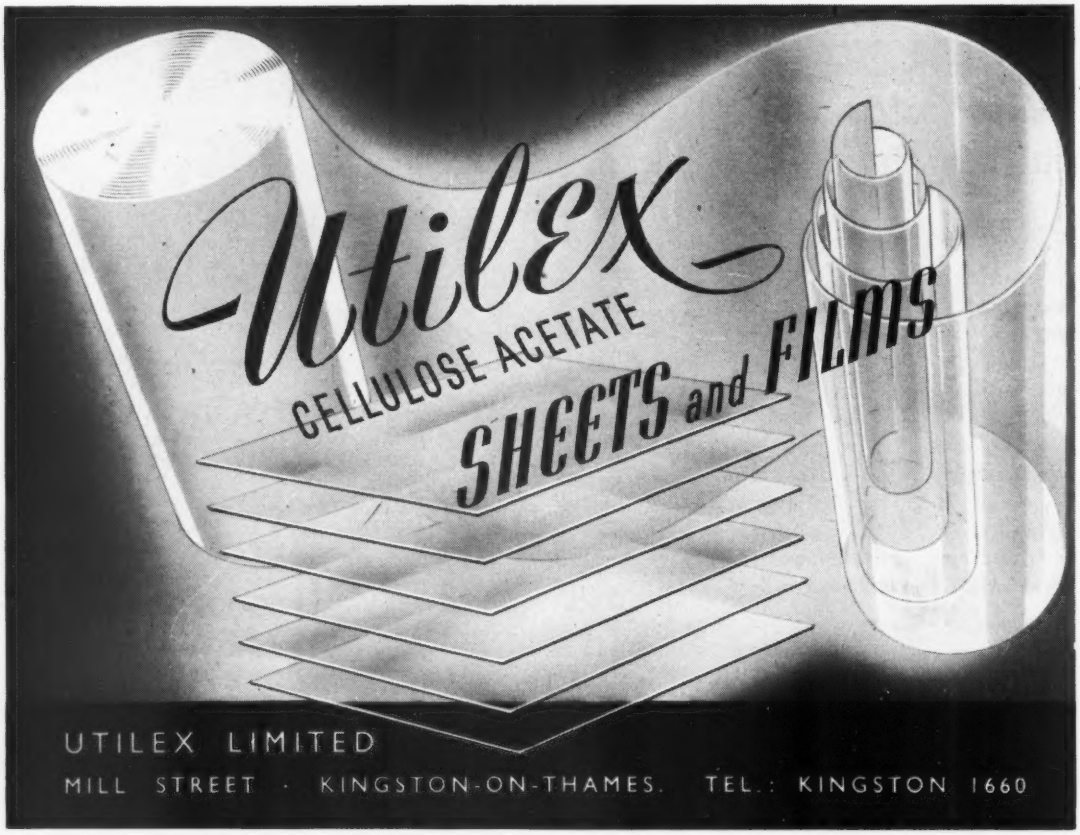

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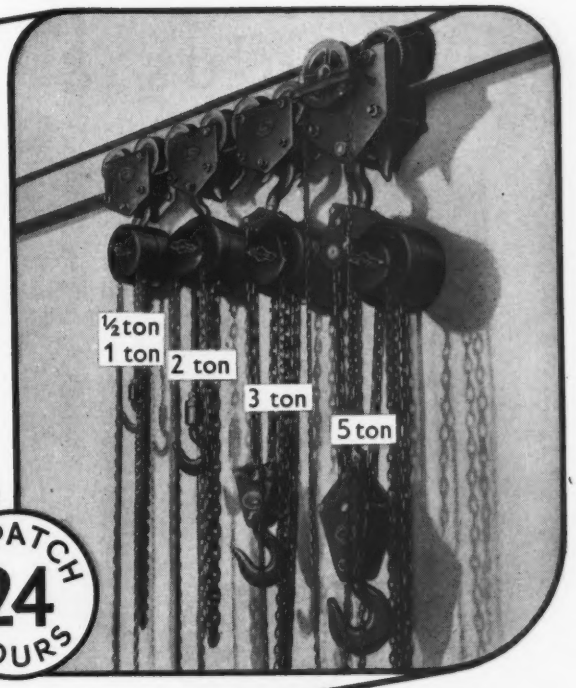

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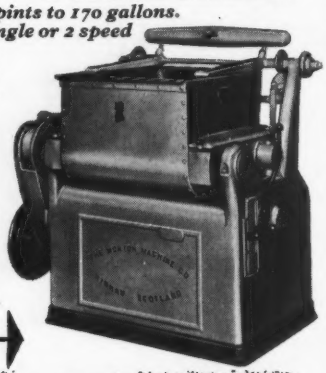

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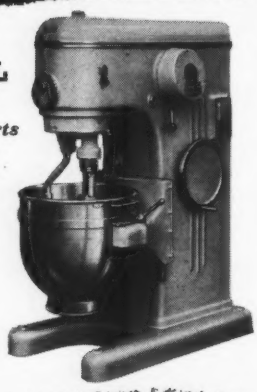

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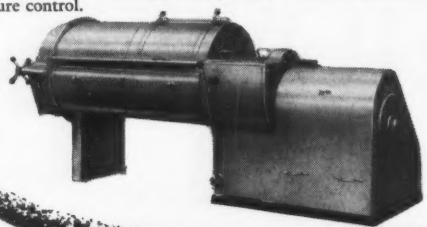

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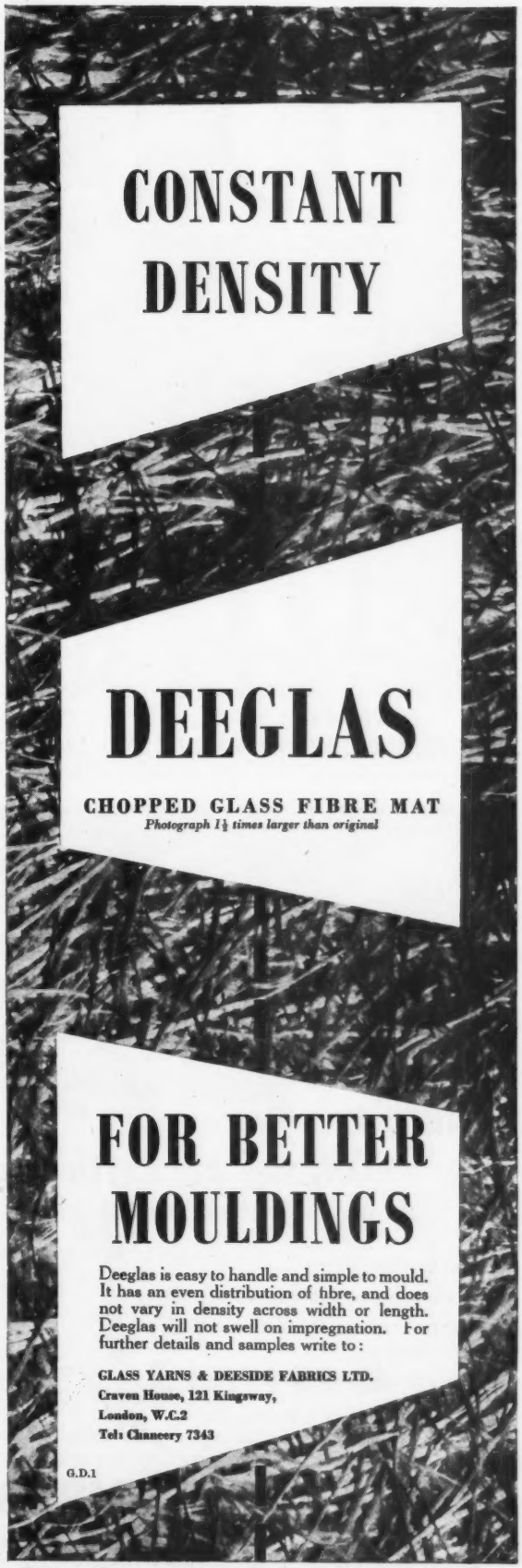
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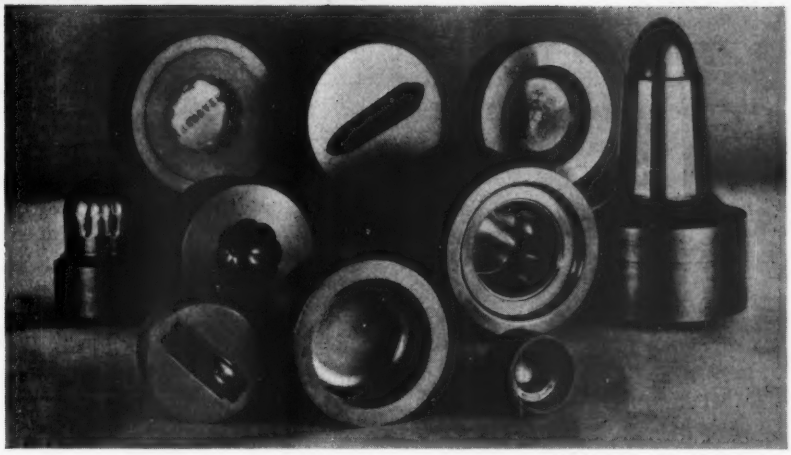

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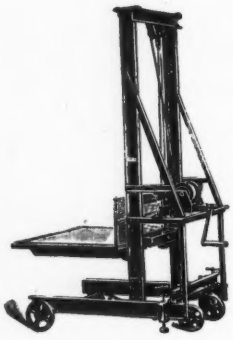

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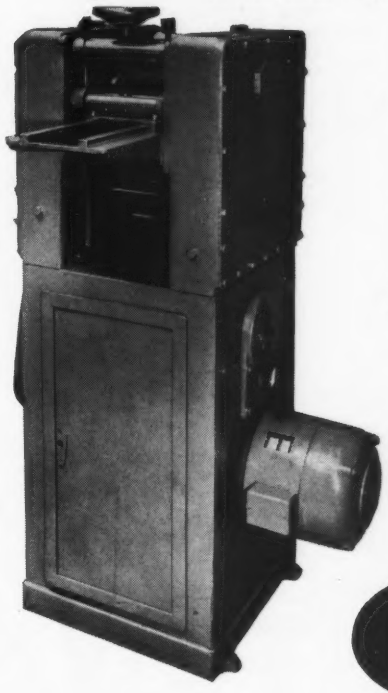

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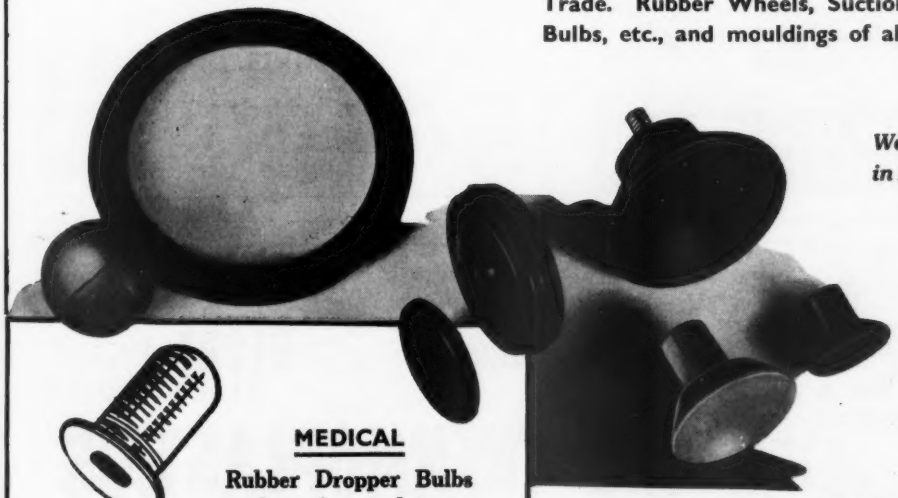

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TELEGRAMS PHONE BALACA GRO 5717
CELLULOSE ACETATE · BUTYRATE
POLYSTYRENE · P.V.C., etc., etc.

BRITAIN'S LARGEST STOCK of Modern Reconditioned HYDRAULIC & PLASTICS MACHINERY

YOU ARE INVITED TO VISIT OUR MILLWALL SHOWROOMS. Please telephone for appointment.

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Replant Works, Cuba Street, Millwall, E.14
Telephone : East 4081 (5 lines)
Cables : REPLANT, LONDON

Including

Our current stock of Large Hydraulic Presses includes:—

3,700 ton Multi-daylight Hot Plate Press by John Shaw & Sons (Salford) Ltd., platens 9′ × 4′ with self contained Pumping Equipment mounted on press head, driven by 75 H.P. A.C. Motor.
2,650 ton Belting or Flooring Press, steam platens 18′ 4″ × 7′ 4″ with self contained Pumping Equipment.
2,500 ton Press, table 9′ × 6′ 6″, 3-ram, could be fitted with new platens.
2,000 ton Upstroke Press, table 36″ square.
700 ton Press by John Shaw, table 6′ 4″ × 3′ 9″.
600 ton six-daylight Press, steam platens 72″ × 50″ with self contained Pumping Unit.
Also makers of REED 60″ × 22″, 42″ × 16″, and 13″ × 6″ two-roll Plastics Mills.

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NOTED FOR TECHNICAL ACCURACY AND DELIVERY. OVER 40 YEARS' EXPERIENCE. WE POSSESS A WELL EQUIPPED TOOL ROOM AND DEAL WITH REALLY DIFFICULT SUBJECTS.

Address enquiries to

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THE Plastics Division of Imperial Chemical Industries Ltd. regret that in their advertisement, in the February issue, the manufacture of a group of 'Perspex' Acrylic Signs was attributed to the Superb Stamping Co. Ltd. when, in fact, the Lincoln Bennett Sign was designed and manufactured by the P. L. Display Co. Ltd.

REQUIRED
IN A LONDON OR SUBURBAN AREA
FOR LIGHT ENGINEERING COMPANY
SINGLE-STOREY
FACTORY
OF APPROX. 20,000 TO 40,000 SQUARE FEET
Particulars of suitable premises, preferably on a main road and with land for extension are requested in confidence by:
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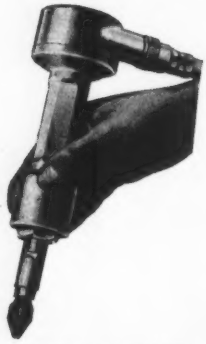
Air Turbine
HAND GRINDERS
FOR YOUR MOULDS

AJAX JUNIOR
Weighs only 8 oz. Speed approx. 90,000 R.P.M. For Grindstones ¼" to ½" dia. Sturdy Spindle. Collet bored for ¼" dia. shanks. Air Pressure required 50-100 lbs./sq. in.

Leaflets P2 and P3 on request.

Please state Air Pressure when ordering



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Powerful, yet easily handled Speed approx. 50,000 R.P.M. For Grindstones ½" to ¾" dia. Collet bored for 6 mm. or ¼" dia. shanks. Air Pressure required 50-100 lbs./sq. in.

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Should you have anything for disposal either now or at any future time please send us samples, full particulars and price on a cash settlement basis and the matter will have our immediate and careful attention.

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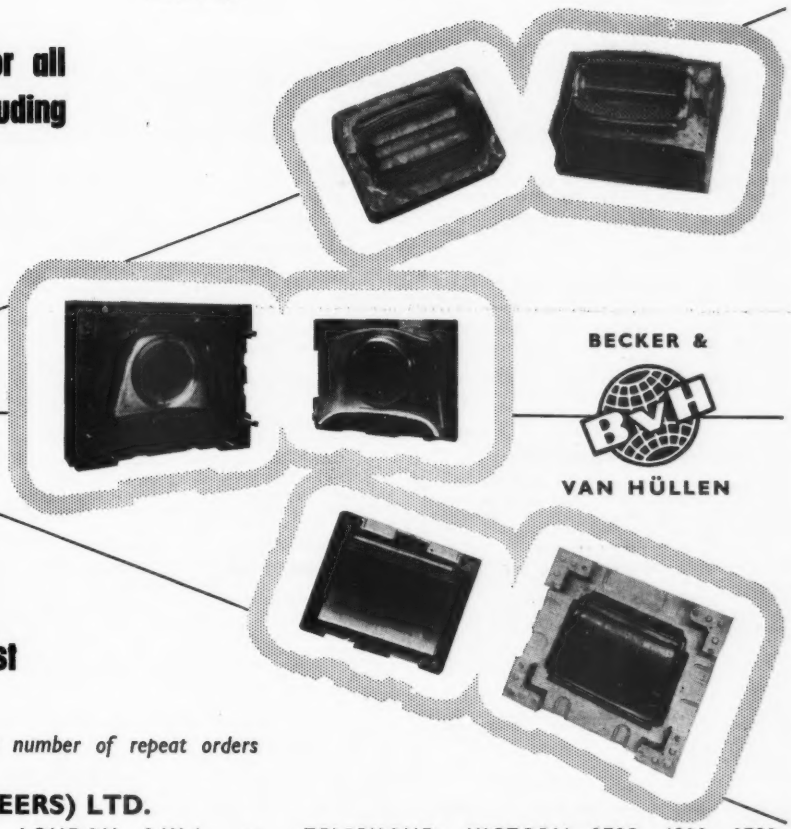
BY PLASTIC MOULDING COMPANY
4 to 8 oz. INJECTION MOULDING MACHINES
NEW OR IN GOOD SECOND-HAND CONDITION
●
WRITE STATING MAKE, CAPACITY, AGE, CONDITION, AND PRICE TO:—
BOX No. P.021 c/o "PLASTICS"

For PLASTICS MOULDS for all types of moulding, including injection moulding, at competitive prices and quick delivery . . .



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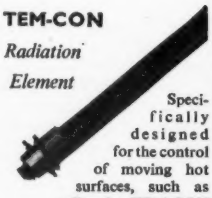
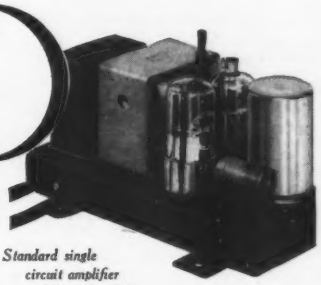


Specifically designed for the control of moving hot surfaces, such as rolls, the TEM-CON Radiation Element is just one example of the specialised application of TEM-CON elements.

TEM-CON *Temperature Indicating Instruments* Neat and compact, with automatic cold junction compensation, 3 in. "easy to read" scale. Competitively priced.

What is the most accurate inexpensive and adaptable form of **TEMPERATURE CONTROL?**



Standard single circuit amplifier 4½" × 4" × 7½" overall.

So simple . . . a TEM-CON installation comprises two parts: a small amplifier, a sensitive element. So sure . . . the TEM-CON system controls temperature within ± 0.2 deg. C. So economical . . . the system offers standands of fidelity ordinarily obtainable only at much higher costs. And another great advantage is its ready adaptability. Thanks to the simplicity of the sensitive elements, available in a range of types and sizes, they can be built up from standard components to suit the individual job.

Your control problem might be solved by P.A.M. Write for our suggestions.

The **TEM-CON** ELECTRONIC SYSTEM *has the answer*

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One of the group of Companies associated with the Southern Areas Electric Corporation Ltd.

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RATES—4d. per word (minimum 12 words 4/-). Each paragraph charged separately and name and address must be paid for. Semi-displayed setting 35/- per single column inch. Series discounts of 5% for 6, and 10% for 12 consecutive insertions allowed to trade advertisers.

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HEAD OFFICES: Bowling Green Lane, London, E.C.1, England. Telephone: Terminus 3636. Telegrams: "Pressimus, Phone, London."

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BUSINESS OPPORTUNITIES

DESIGNERS. INVENTORS. PATENTEES.

We are always open to consider ideas, suggestions and propositions for compression mouldings. Write Box P9922, care of "Plastics." zzz-470

INJECTION MOULDING CAPACITY available. Low mould cost, speedy delivery. Foley Plastics, Avery House, Avery Row, W.1. Mayfair 6922. zzz-455

CONSULTANT, fully conversant with foamed plastics, required. Write, Box P0212, care of "Plastics." 202-31

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MODERN CONTACT LENS CENTRE, 7 (T) Endsleigh Court, W.C.1. Deferred terms. Booklet sent. zzz-474

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MAKE A NOTE OF OUR NAME! As the largest buyers of used 40-gal. Steel Drums in U.K. we offer today's best prices for any quantity of bung and open-head types you have for disposal in sound condition, and a country-wide service for prompt collection.
Victor Blagden and Co., Ltd., Plantation House, Mincing Lane, London, E.C.3. Phone, Mansion House 2861. 202-1051

FINANCIAL AND PARTNERSHIP

REQUIRED by a well-established running South African plastics manufacturing concern, partner fully acquainted with the production of plastics by injection and compression moulding. Amount involved is from not less than £15,000 to £20,000. Modern machinery and equipment will also be favourably considered as part of investment. Box P0210, care of "Plastics." 202-12

MACHINERY, TOOLS AND PLANT

ALTERATIONS. Diesels sets, electric motors, switch gear, transmission equipment, fluorescent lighting and industrial fittings ex stock, keen prices. Contact G. L. Murphy, Ltd., Menston, near Leeds. zzz-210

HYDRAULIC. Frazer Mono-radial pumps, new and second-hand, in stock. Thompson and Son (Millwall), Ltd., Cuba St., London, E.14. East 1844. zzz-440

ELECTRIC MOTORS, 400/3/50.

H.P. 120, make Brooks, type S/R, frame S/P, speed 1,440; 90, Brook, S/R, S/P, 960; 90, Brook, S/R, S/P, 1,440; 50, Brook, S/R, S/P, 960; 35, C/Parkinson, S/R, S/P, 720; 30, C/Parkinson, Auto Sync., P/V, 1,000.

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Also new Brook motors. Unused and reconditioned motors of all makes. Transformers, including special ratios. Alternators, switchgear and single to three-phase convertors, etc. Prompt delivery.

GEORGE COHEN SONS AND CO., LTD.,
WOOD LANE,
LONDON, W.12.
Phone, Shepherd's Bush 2070.
AND
STANNINGLEY, NEAR LEEDS.
Phone, Pudsey 2241. 202-33

EIGHT ROTATING AND TILTING POWDER BLENDERS, by Porteus, of Leeds, ideal for plastics, drum of stainless steel, 2 ft. diameter, 3 ft. 1 in. deep, with agitating baffles, red, gear driven, with hand-wheel tilting motion through 270° now belt driven, but can be motorized at extra, £160 each.

Twenty-five vibratory sifters, of stainless steel, two screening sizes, 2 ft. 10 in. by 11 in. and 3 ft. 6 in. by 1 ft. 3 in., belt-driven units, £65 and £85 each respectively. Several Werner tilting mixers, in various sizes, at very reasonable prices.

Hodson and Co. (Machinery), Ltd., Tottington, Bury, Lancs. Phone, Tott 123-4. 202-23

Machinery, Tools and Plant (contd.)

PLASTICS MACHINERY.

Hydraulic Presses of all sizes. Injection Machines, Extruders, Mixing Mills, Hydraulic Pumps and Accumulators.

Send your inquiries to the specialists,

REED BROTHERS (ENGINEERING), LTD.,
REPLANT WORKS,
CUBA STREET, MILLWALL, E.14.
Phone, East 4081 (five lines). 202-17

ONE NO. 3 MANESTY PRE-FORMING MACHINE, fully motorized, for disposal. Apply, Universal Metal Products, Ltd., Langley Rd., Salford, 6. 202-6

ONE 4,700-TON HYDRAULIC VENEER OR HOT-PLATE PRESS by Fielding and Platt. Four rams 26 in. dia. by 4 ft. stroke. Working pressure 250 and 5,000 lb. per sq. in. Eight steel columns 12½ in. dia. fitted with nuts. The press is fitted with platens 12 ft. long and 3 ft. wide, arranged to give eight daylights of 6 in. each. Suitable for hot water at 200 lb. per sq. in. at 320° F. The platens are complete with flexible connections and steam headers. Press is complete with electrically driven feed tables of the conveyor type. Included with the plant are three horizontal 3-throw pumps, one 2½-in. dia. by 6-in. stroke, the other two being 1 3/16-in. dia. by 6-in. stroke, along with two weight-loaded accumulators 4-in. dia. by 6-ft. stroke. Also two low-pressure receivers 7 ft. dia. by 14 ft. long, complete with Mather and Platt multi-driven turbine pump. Inter-connecting piping with supply tank are also available.

GEO. COHEN, SONS AND CO., LTD.,
STANNINGLEY,
Nr. LEEDS.
Phone, Pudsey 2241. 203-4

6 OZ. LESTER FOR SALE, elderly but in excellent condition. Write, Box P0215, care of "Plastics." 202-x6804

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WANTED,
PLASTIC MOULDING TOOLS
AND
FINISHED PARTS
FOR
RADIO CABINETS AND ELECTRICAL APPLIANCES.
PLEASE SEND PARTICULARS.
Box P.019, care of "Plastics." 202-1058

PEN AND PENCIL MOULDS required. Send samples and full particulars to Roy Stewart and Co., Ltd., 19 Palace St., London, S.W.1. 202-9

NOTICES

THE TRADE MARKS Nos. 648013, 648014, 648015, 648016, 648017, 648019, 648020, 648021, 648022 and 648023, consisting of the word Plaxide and registered in respect of coating materials for paper; saddles for cycles; paper, cardboard and cardboard articles; book-binding material made of artificial resin, cellulose acetate or cellulose nitrate; artificial rubber and synthetic rubber, and articles made therefrom; waterproof felts for roofing; textile piece goods and piece goods made of plastics, all for use in covering and upholstering furniture; clothing made of leather or of synthetic resin plastics; floor coverings; wall hangings (non-textile); leather cloth; and playthings and toys, were assigned on February 4, 1954, by Associated Weavers (Sales), Ltd., of Maranda House, Binney Street, Oxford Street, London, W.1, to Armoride, Ltd., of Grove Mill, Earby, via Colne, Lancs, without the goodwill of the business in which they were then in use. 202-3

MACHINERY, TOOLS AND PLANT WANTED

COMPRESSION MOULDING TOOLS WANTED. Send details of your surplus, obsolete and redundant moulding tools. Box P0113, care of "Plastics." 206-1057

INJECTION MOULDING MACHINES REQUIRED. Condition or size not important. Send details. Box P023, care of "Plastics." 207-1062

MISCELLANEOUS

EXTEND YOUR TRADE.
Use a trade mark. Consult
Trade Mark Protection Society,
12 Church St., Liverpool. zzz-452

PRODUCTION CAPACITY

SMALL INJECTION moulding capacity and up to 3 oz. available at keen rates. Box P866, care of "Plastics." zzz-449

VISIJAR LABORATORIES, LTD.,
THE LEADING CRAFTSMEN IN
"PERSPEX."
PROTOTYPE AND REPETITION.
OFFICIAL I.C.I. STOCKISTS "PERSPEX"
SHEET, TUBE, ROD.
STOCKISTS AND FABRICATORS OF "FORMICA."
149 LONDON ROAD, CROYDON, SURREY.
Phone, Croydon 1384. zzz-467

INJECTION MOULDING by I.O.G. Industries, Ltd., 41 Marshgate Lane, Stratford, E.15. Maryland 2804. 208-1034

TUBE LAMINATION ENGINEERING, LTD.,
HIGH WYCOMBE,
BUCKS.
Phone 1921-2.
MAKERS OF
SYNTHETIC RESIN BONDED TUBES,
ROUND, SQUARE AND RECTANGULAR
FABRICATORS AND ASSEMBLERS
IN PLASTIC AND METALS.
FULL SUPPORTING MACHINE SHOP
AVAILABLE. zzz-472

INJECTION MOULDING CAPACITY available up to 3 oz., precision moulding a speciality. Guardian Plastics, 76 and 77 Rahere St., London, E.C.1. 210-1042

PLASTICS (MANCHESTER), LTD.,
BRITAIN'S LEADING STOCKISTS AND
DISTRIBUTORS.
SPECIALISTS IN
FABRICATION, INJECTION MOULDING AND
ENGRAVING.
11 WHITWORTH STREET,
MANCHESTER, 1.
Central 7081-2 and Central 1000. zzz-468

INJECTION MOULDINGS AND PLASTIC COVERINGS in acetate alkathene, p.v.c. machined parts in brass, steel and plastics.
We now have extra capacity and can offer quick delivery at our new factory. We solicit your inquiries.
F. A. Ketch and Son, Ltd., Trent Valley Works, Lichfield, Staffs. Lichfield 3052. zzz-476

SHORT RUNS A SPECIALITY: LONG RUNS A PLEASURE. Low mould costs and overheads. Injection capacity and technical knowledge at your service. Westminster Plastics, 367 High St. North, London, E.12. Grangewood 3777. 212-1055

Production Capacity (contd.)

DINES PRODUCTS, Whitehall Lane, Grays, Essex, for injection mouldings. 211-1050

REPETITION in Ebonite, Erinoid, etc. Capstan lathe work. Temple St., Rugby. 210-1043

PRECISION ENGINEERS AND TOOLMAKERS have capacity available on two Taylor Taylor Hobson three dimensional pantograph machines. Enquiries invited. Box P028, care of "Plastics." 203-1061

KINGSTON PLASTICS, LTD., Unity Works, Union St., Kingston-on-Thames. Manufacturers of virgin and second-grade cellulose acetate moulding powders, matched to customer's own requirements for colour and flow. Customer's own waste also reprocessed to specified requirements. Sorting and grinding incorporating magnetic separation of metallic particles of all thermoplastics undertaken. Phone, Kingston 8405. 207-1063

ELCO PLASTICS, LTD.,
HIGH WYCOMBE, BUCKS.
Phone 1921-2
OVER 50 PRESSES.
EXPERIENCED COMPRESSION, TRANSFER AND INJECTION MOULDERS.
DESIGNERS AND MAKERS OF MOULDS ON THE PREMISES.
CAPACITY UP TO 500-TON COMPRESSION AND 10 OZ. INJECTION
LARGE ASSEMBLY SHOPS.
A.I.D. APPROVED. zzz-473

CAPACITY available for manufacture of compression and injection moulds, to customer's own designs. Modern plant and equipment. Enquiries for same will receive prompt attention. Box P027, care of "Plastics." 203-1060

CHIPPING OF PLASTICS AND GRINDING, screening, mixing and drying of all raw materials undertaken for the trade. Crack Pulverizing Mills, Ltd., Plantation House, London, E.C.3. Man 4405. 202-20

COMPRESSION AND INJECTION MOULDING capacity immediately available in all thermosetting and thermoplastic materials. Customers' own moulds can be used or tools provided in our up-to-date tool room. Box P996, care of "Plastics." 202-21

GOLD, SILVER and all metallic finishes on plastics, glass, etc. Alma Plating Works, Ltd., Hedge Lane, Palmers Green, N.15. Pal 0055. 202-22

RAW MATERIAL

PERSPEX! PERSPEX!! PERSPEX!!! Official stockists for I.C.I. acrylic sheets. Sheets cut to your requirements. Fabrication and mounting specialists to the trade:—

S. C. Errington (Hanwell), Ltd., 132a Uxbridge Rd., Hanwell, London, W.7. Phone, Ealing 5288. zzz-460

ALWAYS LARGE STOCKS OF
CASEIN
RODS, TUBES AND SHEETS.
PERSPEX
SHEETS UP TO 1 IN. THICK.
CELLULOSE ACETATE
CATALIN RODS.
S.R. (PLASTICS), LTD.,
93 ALDERSGATE STREET, E.C.1.
Phone, Monarch 4686. 210-1037

SAVE TIME AND MONEY!
If you require a good service for turned parts in all plastics—or—

Supplies of casein, ebonite, fibre, laminated bakelite, in rods, sheets and tubes, or cellulose acetate and butyrate tubing, contact: A. E. Goodeve, Ltd., 188a Seven Sisters Rd., London, N.7. Archway 3654-6721. 211-1054

PERSPEX SCRAP, offcuts and domes, regular supplies available.
Alkathene tubular films, 25 in. wide, 5/1000 thick, 10½ cwt. Stamford Metal Co., 54 Newington Green, London, N.16. 202-1056

CUEX, LTD., can offer all at prices well below current list:—
Polystyrene.
Cellulose acetate.
Polyethylene.
P.V.C.
Polyvinyl butyral.
Perspex and Diakon.
Send now for details.
Cuex, Ltd., 270 Corporation St., Birmingham. Central 5474. 202-16

CELASTOID 3 mm. thick, black full-size sheets, new material, in makers' original wooden cases. Offers wanted, to clear. Write Box 333, Rays, Cecil Court, London, W.C.2. 202-8

Raw Material (contd.)

CHEAP TO CLEAR. 4 cwt. celluloid Pol/Mat turquoise 25/1000-in.; 7 cwt. celluloid P/P, olive green. 30/1000-in.; 10 cwt. clear acetate sheets, .040-in., all in perfect condition.
P. E. ROWE, LTD., Langley Wharf, Chester Rd., Birmingham, 24. Erd 0585. 202-7

ACETATE BUTYRATE (TENITEII) some good colours surplus for sale. Please inquire Box P0117, care of "Plastics." 202-24

PLASTICS (MANCHESTER), LIMITED,
BRITAIN'S LEADING STOCKISTS
OF
PERSPEX SHEET, ROD, TUBE,
11 WHITWORTH STREET.
MANCHESTER, 1.
Central 7081-2 and 1000. 202-19

MELAMINE CREAM, over ½-ton cheap. Box P0118, care of "Plastics." 202-25

ACETATE SCRAP in quantities for sale. Write Box P0122, care of "Plastics." 202-26

POLYSTYRENE, light green, virgin medium impact, for disposal. Box P0125, care of "Plastics." 202-27

VINYL ACETATE MOULDING POWDER, some good colours, for disposal. Write Box P0211, care of "Plastics." 202-29

RAW MATERIAL WANTED

WANTED, Polythene scrap. Write to Box P7416, care of "Plastics." zzz-0322

ERLANOS, LTD., 93 Aldersgate St., E.C. (Monarch 4686), require Perspex and cellulose offcuts and scrap, clear and coloured, highest prices paid. 206-3330

SCRAP.
ALL PLASTIC SCRAP
AND CUTTINGS BOUGHT.
BEST CASH PAYMENTS.
J. W. NASH AND CO., LTD.,
27 BEETHOVEN STREET, W.10.
Ladbroke 3555. 202-34

PROMPT CASH OFFERED for virgin and reprocessed cellulose acetate and polystyrene. Give manufacturer's name and packing. Box P873, care of "Plastics." zzz-464

P.V.C. GARMENT AND HANDBAG OFFCUTS wanted. We collect and pay cash. Brockwell Plastics, Ltd., 50 Hollingbourne Rd., S.E.24. zzz-463

SURPLUS STOCKS of thermo-setting moulding powder wanted. Send details. Box P0031, care of "Plastics." zzz-475

SCRAP.
THE
LARGE BUYERS
ARE
MICHAEL STEVENS,
KESWICK ROAD WORKS, S.W.15.
Vandyke 3345-6. 202-35

POLYSTYRENE and POLYTHENE, any quantities of surplus lots, scrap, film and nozzle lumps urgently wanted. Please offer with sample to Herbert Connor, Ltd., 120 Beaufort Park, Falloden Way, London, N.W.11. 202-28

SITUATIONS VACANT

The engagement of persons answering advertisements in respect of vacant situations must be made through a local office of the Ministry of Labour, or a scheduled employment agency, if the applicant is a man between the ages of 18 and 64 inclusive or a woman between the ages of 18 and 59 inclusive, unless he or she, or the employment, is excepted from the provisions of Notification of Vacancies Order, 1954.

A VACANCY WILL OCCUR in June for a factory manager for a small works in the Midlands specializing in structural plastics and the formulation and application of P.V.C. dispersions. The successful applicant will be A.P.I. or H.N.C. or equivalent standard and will be paid a substantial salary with bonus on factory production. Box P0110, care of "Plastics." 202-1059

SETTERS required for company engaged in injection moulding of thermoplastic materials. Experience desirable, but applicants with mechanical aptitude will be considered. Write Box P0214, care of "Plastics." 202-x7295

PLASTICS OR RUBBER CHEMIST, preferably 30-40 years of age and B.Sc., required by old-established manufacturing company to pioneer and develop new department. State experience and remuneration. Box P0213, care of "Plastics." 202-32

Situations Vacant (contd.)

YOUNG MAN, under 30, required by well-established plastics raw materials manufacturers for interesting new post in London. The post broadly covers technical publicity, but previous experience in this field is not required. Some experience in the synthetic resins and/or plastics industries is necessary and a good education at least to Inter B.Sc. standard is essential; some sales experience is desirable. Unique opportunity for keen, intelligent man with initiative wishing to enter field offering wide scope for ability. Permanent position, excellent prospects; pension scheme.
Please write for interview, giving age, details of education, experience, salary required, to Box P029, care of "Plastics." 202-30

EXTRUSION-PVC AND POLYTHENE CABLES. Charge-hand wanted with full technical knowledge, long experience and drive. Small modern shop, good opportunity and wages for first-rate man. State age, qualifications, previous jobs, salary to "E.C.C.," care of Reynells, 44 Chancery Lane, London, W.C.2. 202-18

EXTRUDED PLASTICS. Operator for Midland area. One capable of extruding tubing and sections in thermoplastic materials, including rigid p.v.c. Details of previous experience and when free to Box P022, care of "Plastics." 202-15

TECHNICAL REPRESENTATIVE required. Applicants should have first-class experience in plastics moulding of all types and of sheet forming and fabrication. Capable of designing moulds and advising on manufacture. Good engineering training an advantage.
Replies should give details of education, qualifications, training, experience and age. Box P024, care of "Plastics." 202-14

A CABLE MANUFACTURER in the Midlands requires a technologist to take charge of plastic cable production and development. Experience of the extrusion of p.v.c. materials is essential, but applicant need not have had experience in the cable field. An engineering training to National Certificate standard would be an advantage. A chemist with engineering knowledge and experience of extrusion would be considered. House assistance afforded. Apply Box P025, care of "Plastics." 202-13

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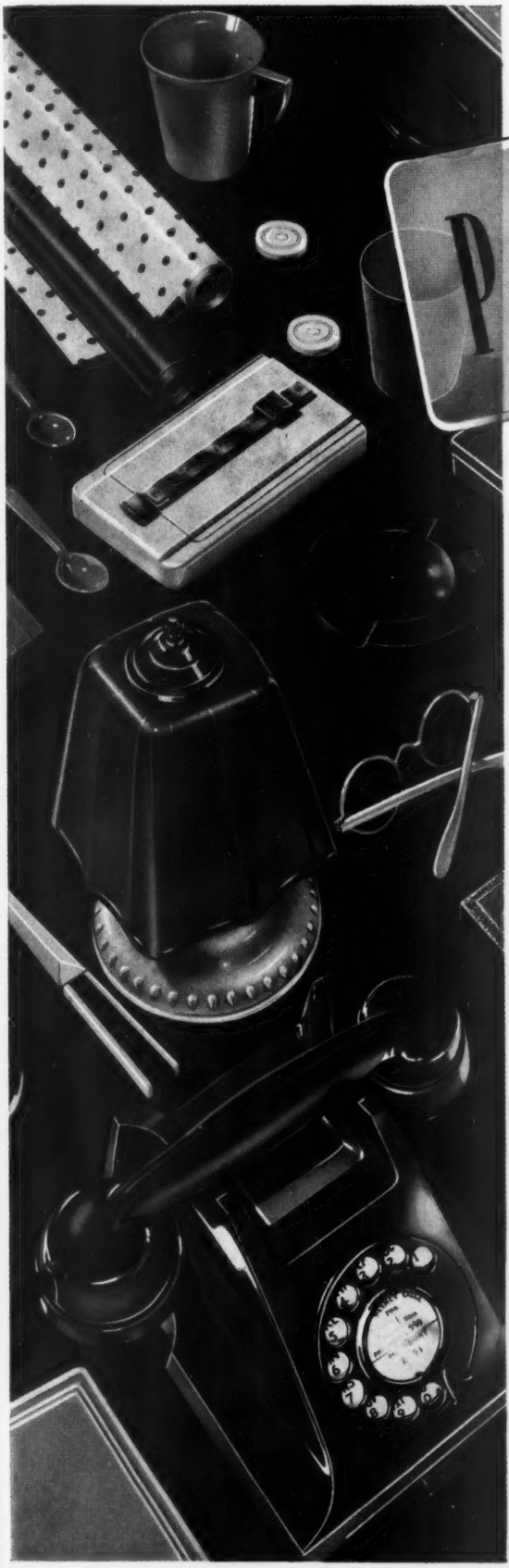

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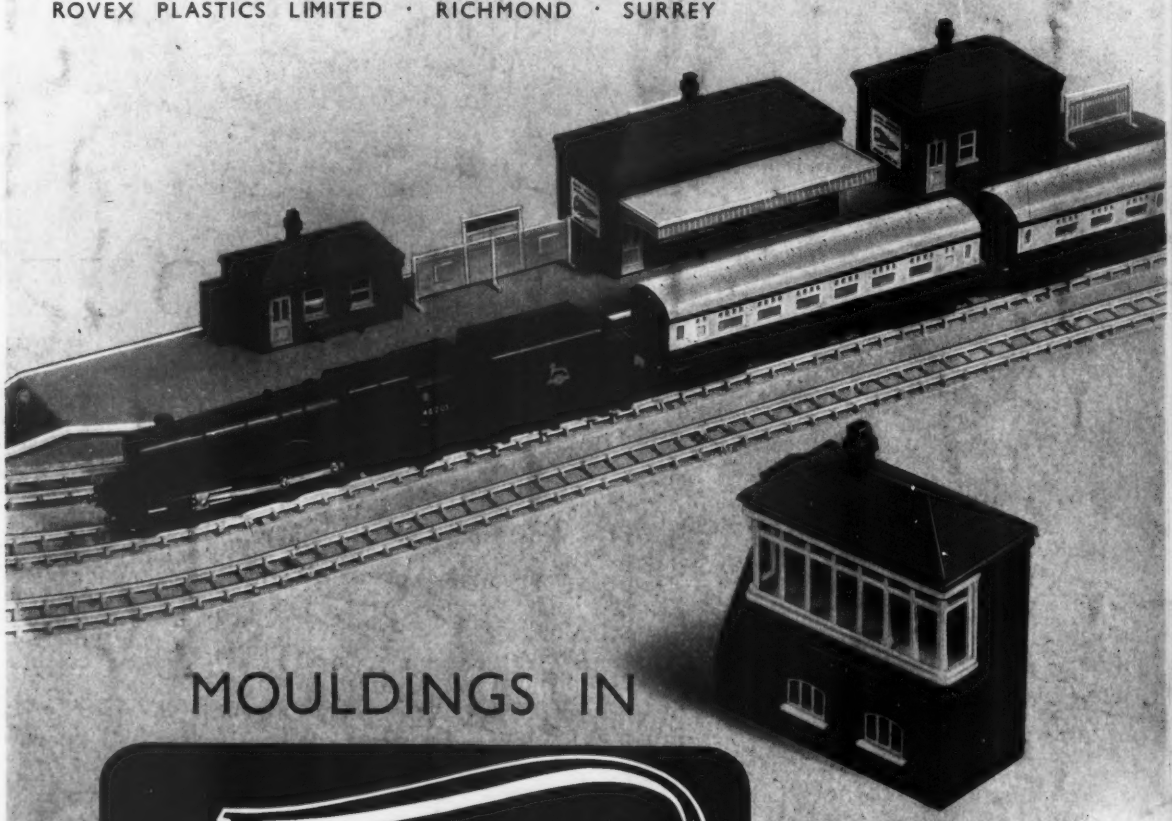

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